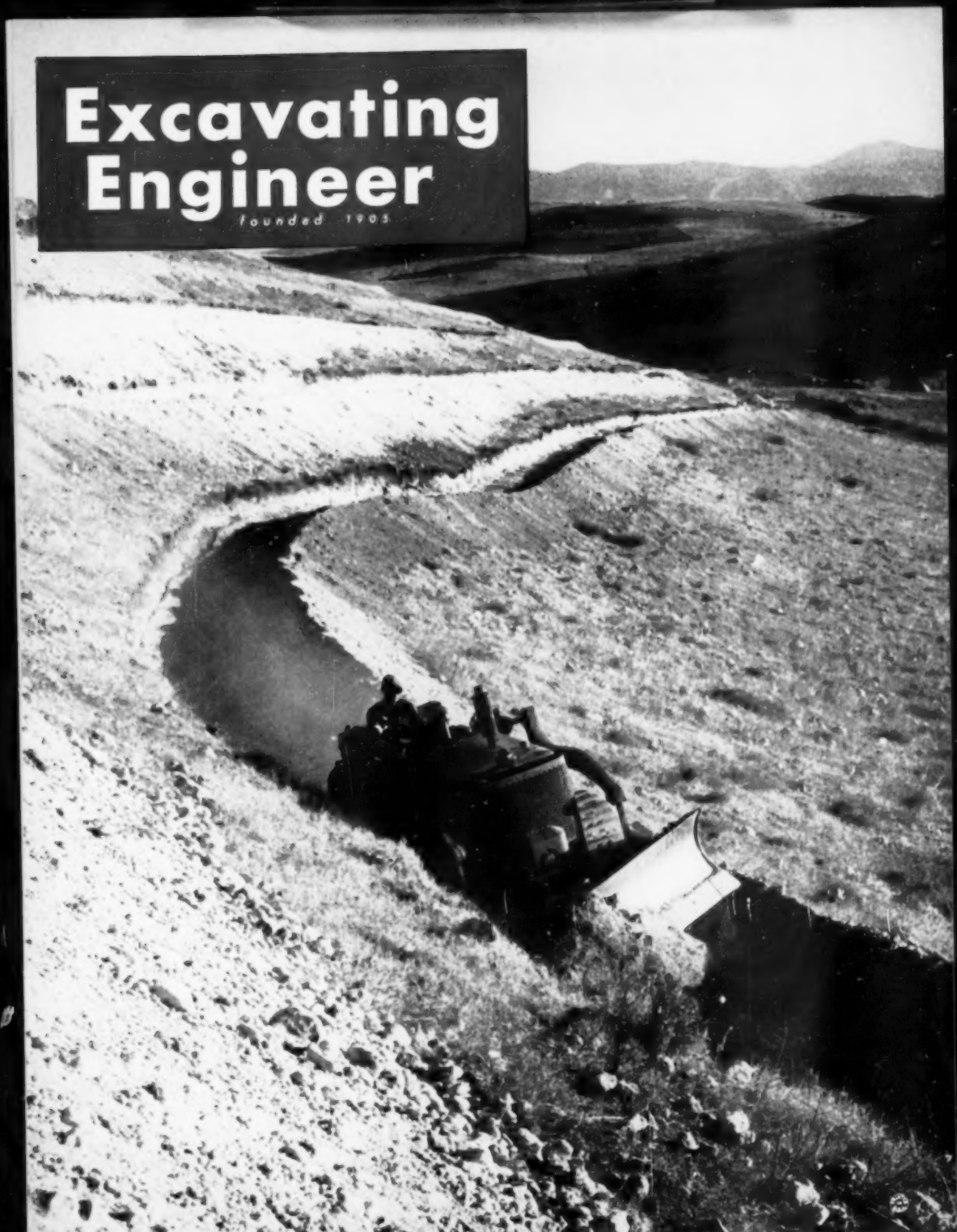
Excavating Engineer

founded 1905



Tractor-dug banquettes conserve water. See "Algeria Saves Its Rain," page 34.

February 1951

BONUS YARDAGE EVERY SHIFT

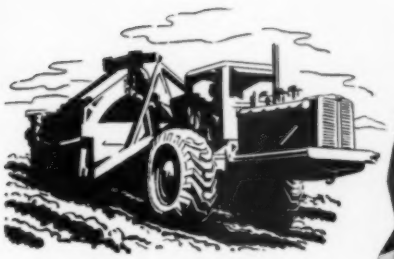
DIGGING overburden that averages 22 feet in depth, and mining a 10-foot bed of Florida phosphate rock, this Bucyrus-Erie 650-B walking dragline is on the job 24 hours a day, seven days a week. Its ability to keep working month after month, through fair weather or foul, has been reflected in the "bonus yardages" that set outstanding production records.

Big dependable yardages are an old story to owners of Bucyrus-Erie stripping shovels and draglines. Owners know that fast, smooth operating cycles combined with on-the-job reliability mean extra output every shift . . . that sound, *years ahead* design and durable construction mean dependability that takes years of hard service in its stride.

RSL50C

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN



It pays to compare CPY*

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SURE-GRIP
Tops for drive-wheel traction on graders and pans
HARD ROCK LUG
Super-tough champ for all types of rock work
ALL-WEATHER
Finest for flotation, rolling big loads faster

*** Cost per yard**—so much lower when you use Goodyear's special-purpose, special-tread, job-specialist tires. Cost-conscious construction men have made them First Choice!

Compare *cost per yard* and you'll see why

It pays to Buy and Specify Goodyear!

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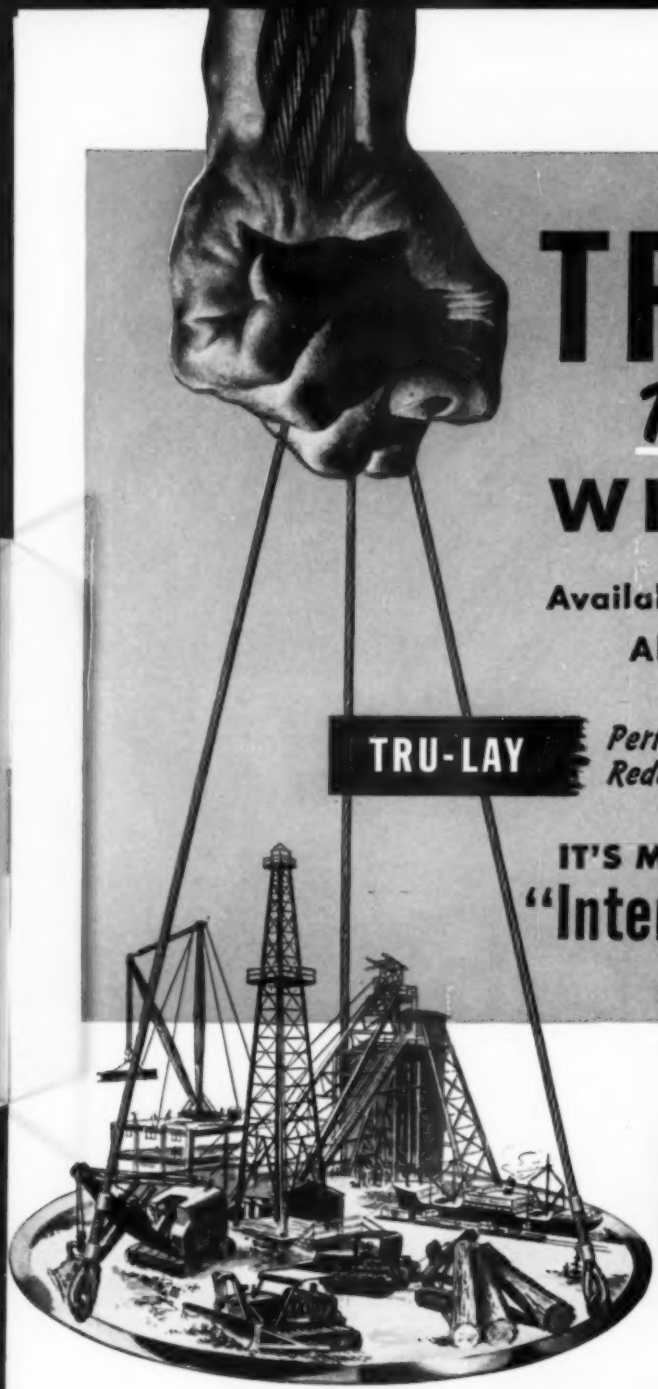
All-Weather, Sure-Grip—T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TIRES THAN ON ANY OTHER KIND



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Excavating Engineer

founded 1905

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Coal Uncovered On the Double 20

At the Brookside-Pratt open pit coal mine in Alabama, a shovel was teamed with a dragline for overburden removal, and stripping efficiency increased 40%. Dragline bucket maintenance was reduced. The 18-man crew has been removing hard rock overburden at a 2,500 yards per-man per-month clip.

Tunnel Spans Campus in Five Months—by E. T. Nesbitt 24

On the new mile-square campus of Laval University in Quebec, Canada, Komo Construction Co., Quebec, trenched out 2,200 yards a day to provide a 12,000-ft. long utilities tunnel for the expanding school.

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New principle for backhoes provides

UNBELIEVABLE DIGGING POWER

It's in the New Sherman Power Digger!

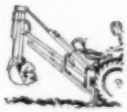
- Patented, actuated bucket gives you selective digging action, better loading, greater versatility.
- All-hydraulic action—made possible by heavy-duty hydraulic cylinders—assures efficient performance.

Specifications

Shovel reach below ground surface	8 feet
Digger reach behind tractor	10 feet
Swinging arc	140°
Trench width, standard digging shovel, single cut	18 inches
Digging shovel capacity	3.5 cu. feet
Loading shovel capacity	.5 cu. feet
Loading clearance, digging shovel, loaded	7 feet
Loading clearance, loading shovel	10 feet

• *Standard tractor mounting gives unmatched maneuverability and transportability.*

• *Digs ditches, trenches, footings, culverts, basements and other excavations.*



• *Handles roots, rocks, hard clay and oiled road surfaces.*

• *Works well behind the tractor at any angle.*

• *Actuated bucket raises high enough to load standard dump truck.*

Find out about this addition to the Sherman line of digging equipment. It is an economical answer to your digging problems. Write for literature today!

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Designed, Engineered and Manufactured Jointly By
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...to make money!

Perhaps in no other business does the difference between profit and loss depend so heavily on the performance of one machine. Your dragline is the heart of your job and you can't afford anything but the best for the heart of the job.

Northwest design brings you the stamina for dragline service—long travel and steady output.

Cast Steel Bases and Cast Steel Machinery Side Frames maintain shaft and bearing alignment in rough going. Simplicity assures easy upkeep and minimum down time. The "Feather-Touch" Clutch Control gives ease of operation without tubing, delicate valves or pumps (your Northwest can't be shut down because of control failure). Uniform Pressure Swing Clutches take the jerks and grabs out of swinging and cut down on time lost to poor control in spotting loads. The Cushion Clutch increases machine and cable life by relieving all parts under power from shock loads. The Northwest Crawler and positive traction on both crawler belts while turning as well as when going straight ahead will take the Northwest where other crawlers have difficulty.

Here is a dragline that *will* make money. Make it the Key Machine on your job.

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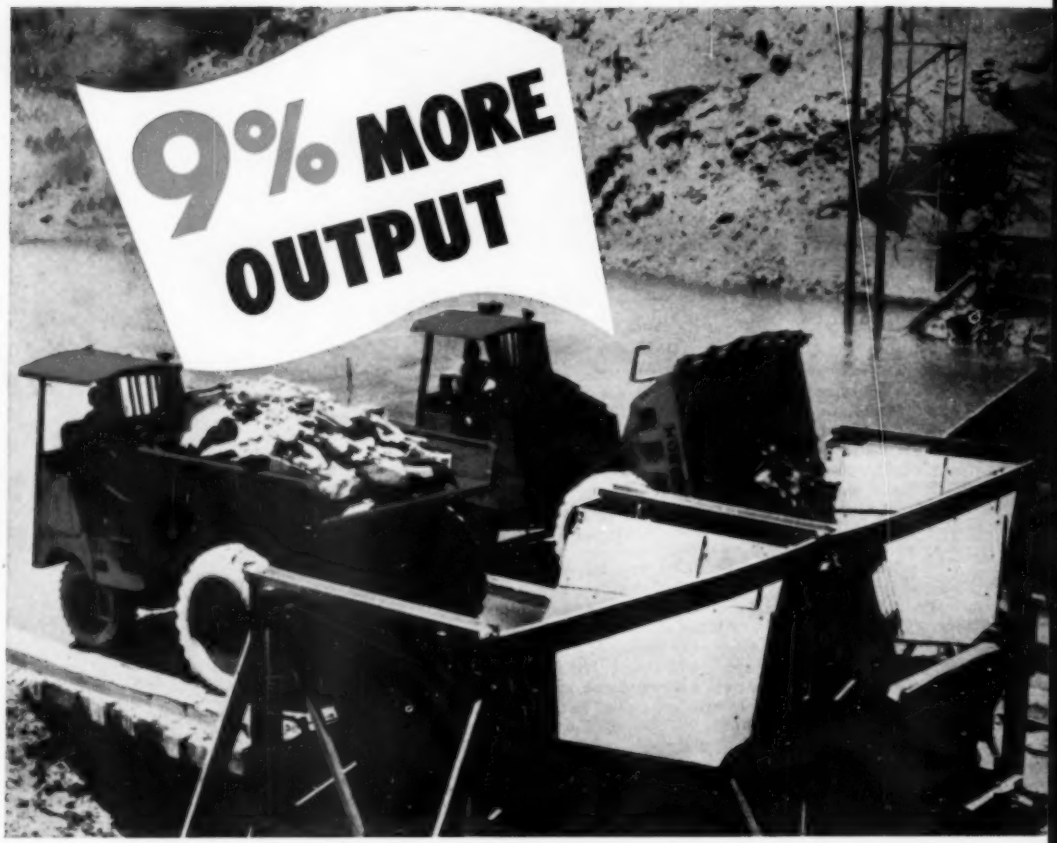
NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS



. . . with 1-SECOND GRAVITY DUMP

IT takes just one second to dump a full 6-yard load with Koehring heavy-duty Dumptor. Operator trips the body release lever and gravity instantly tilts the scoop-shaped body 70 . . . one second later the body is empty, and Dumptor is on its way back for another load. Because there's no waiting for slow-acting body hoists, Dumptor saves 15 to 25 seconds every dump. This adds up to important gains in yardage output. At 16 trips per hour on a 1,000' haul, 20 seconds dumping time saved on every cycle gains 5.3 minutes more productive haul-time . . . adds 9% to hourly yardage output.

This is typical of Koehring Dumptor's basic principle . . . to reduce all non-productive time to the absolute minimum . . . and to increase work-time for more yards per hour, more profit per yard *for you*. Dumptor has many other cost-cutting advantages worth checking . . . see your Koehring distributor.

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CK120

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KOEHRING DUMPTOR®

EXCAVATORS • CRANES • PAVERS • FINISHERS • CONSTRUCTION MIXERS • MUD-JACKS®

TON DUMPTOR STRENGTH PER TON OF PAYLOAD . . .
Layered steel-oak-steel bottom, rib-reinforced body, heavily-trussed main frame provide ample Dumptor strength to stand up to severe loading shocks

NO-TURN SHUTTLE HAUL
Koehring constant-mesh transmission gives Dumptor the same 3 fast speeds forward and reverse, eliminates slow turns at the loading unit, on narrow haul roads, and at dumping location.

NO BODY HOIST means no complicated mechanical hoists to slow up haul cycles, no costly hoist replacement parts with Koehring Dumptors. Gravity dump is always instantaneous, trouble-free . . . no mechanical parts to wear out.

Johnson All-Welded Roadbuilders Bin

Flexible Johnson Roadbuilders All-Welded Bin can be used as a portable batch plant for handling 2, 3 or 4 aggregates. This same bin readily converts to Transit-Mix Plant (illustrated), or to Central Mix, for handling bulk cement and 2 or 3 aggregates. It also can be equipped with 1 or 2 multiple-material Hi-Speed Batchers, size 34 Roadbuilders Batcher, or with a truck-mixer charging batcher in 2, 3 or 4-yd. sizes. Bin is available with 2, 3 or 4 compartments, 50 to 125 cu. yds. capacities. It has easy-charging 11′ width, extra wide fill and discharge openings, steep 50° bottom slopes for fast flow. Your Johnson distributor can show you more production-boosting, cost-cutting features. See him for all sizes, types of mix plants, bins, batchers, silos, buckets, elevators, accessory equipment.

Get the most from Johnson Plants . . . use Koehring Mixers.

Also check Johnson for BIG PAYLOAD CLAMSHELLS

Heavy-duty Johnson Clamshell Buckets get capacity load every bite because all-welded construction lowers center of gravity, lets teeth dig in straight, deep. Big needle-bearing-mounted sheaves reduce friction power loss, deliver full digging power to teeth and lips. Hard manganese cutting edge welded to heavy lips gets tougher with use, assures big-payload performance. See your Johnson distributor. Types, sizes, ⅜ to 2½ yd.

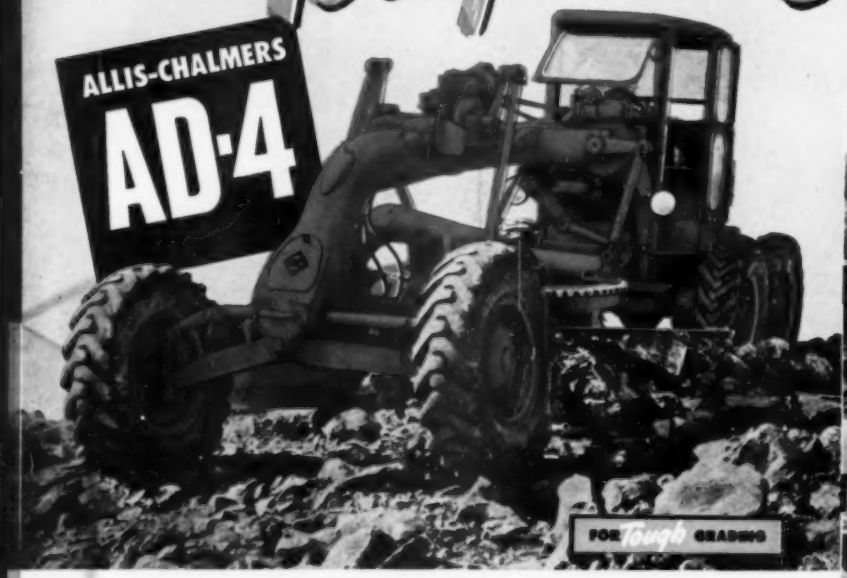
W7

(Koehring Subsidiary) **C. S. JOHNSON CO.** CHAMPAIGN, ILLINOIS

BUILT FOR THE Toughest Jobs

ALLIS-CHALMERS

AD-4



A HEAVY-DUTY MOTOR GRADER in every respect — designed and engineered to stand up under any going, to take more punishment, get more work done with less power effort. Some reasons for the AD-4's outstanding performance on every job:

POWERFUL — 104 brake hp. . . . General Motors 2-Cycle Diesel Engine . . . dependable, compact, economical, instant starting.

HEAVY — 22,140 lb. effective weight . . . balanced for maximum traction and control.

STRONG — Exclusive tubular frame . . . absorbs shocks, protects control rods inside frame.

ACCURATE — blade held firmly on work through direct down pressure . . . smoother cutting.

"ROLL-AWAY" MOLDBOARD — the moldboard that moves material the easiest way . . . by *rolling* it.

TRAVEL SPEEDS smoothly synchronized with operator controls . . . all the needed power applied as required.

HIGH CLEARANCE under circle and axle to handle bigger windrows.

FULL CIRCLE REVOLVING BLADE—swings *ahead* of platform with plenty of end clearance.

FULL RANGE OF BLADE POSITIONS — plus leaning front wheels, for handling all types of grading with ease.

LIQUID-WEIGHTED TIRES ON DRIVING WHEELS put more weight on the ground *where it belongs* . . . enable you to work on steeper slopes. Better traction, smoother riding, less tire wear!

PLUS . . . easier steering, full visibility, larger clutch, numerous other advantages.

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Get the full story from your Allis-Chalmers dealer . . . *NOW!*

"Roll-Away" is an Allis-Chalmers trademark.

Choose the Right Size Allis-Chalmers Grader to Fit Your Needs From This Complete Line.

MODEL	BRAKE HP.	ENGINE
AD-4	104	2-Cycle Diesel
AD-3	78	2-Cycle Diesel
BD-3	78	2-Cycle Diesel
BD-2	50.5	2-Cycle Diesel
D	34.7	Gasoline

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FOR EASIER OPERATION
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For better service and more economy

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You'll get maximum service from wire rope that has been specially designed for each job. Over the years, ropes for all types of equipment in every field have been developed by Macwhyte. It will pay you to specify Macwhyte Wire Rope . . . engineered and job-proved for your particular equipment. Recommendations are promptly available from Macwhyte distributors or Macwhyte Company.

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A NEW GIANT SCRAPES THE SKY. The 41-story home of United States Steel and the Mellon National Bank. Known officially as The 525 Wm. Penn Place Building. Steelwork shot up at the amazing rate of two floors a week. The heavy lifting was done by two cranes rigged with American TIGER BRAND Wire Rope ($\frac{5}{8}$-inch 6 x 19). Steel loads ran from 10 to 30 tons—all of it lifted safely over a busy street.

THE TIGER SLINGS IT. 10 tons of steel held securely with TIGER BRAND Slings for a quick ride to the 32nd floor.

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GETS ITS FACE LIFTED

WITH THE HELP OF TIGER BRAND WIRE ROPE

SCOOPING OUT 7000 CU. YDS. OF CLAY AND SHALE A DAY is the average set by five fast moving carryalls. They are working on the cloverleaf intersection of the Greater Pittsburgh Airport Road, the Pitt Parkway West and U. S. Highways 22 and 30. TIGER BRAND Wire Rope operates the 17 cu. yd. scoops. Contractor: Dinardo, Inc., Pittsburgh, Pa. Sub-contractor: Ruth Construction Co., Scottdale, Pa.

WANT to see a construction boom in action? Come to Pittsburgh. The old "gal" is getting a "face lifting" that will transform her into a sparkling modern city.

Five new stainless steel and aluminum skyscrapers will glitter in the golden triangle. An ultra modern airport and a new railroad station will brighten up the gateways. Express highways will carry automobile travelers quickly into and out of the city.

Construction crews are moving mountains of rock and shale, digging tunnels and building bridges to eliminate bottlenecks on the new super highways.

The famous old "Point," now an eyesore, will become the beautiful Fort Pitt Park . . . and an underground parking area will be built right in the center of the city shopping district.

TIGER BRAND WIRE ROPE DOES THE HEAVY WORK

On most of these big engineering jobs, TIGER BRAND Wire Rope is very much in evidence. Contractors in the Pittsburgh area use more TIGER BRAND than any other make.

Why? Because this tough steel rope lasts longer, moves more materials and gets the job done quicker at less cost. Write for our catalog.

CLOUDS OF GRITTY DUST put this TIGER BRAND Wire Rope on the spot. But even under these rugged operating conditions the 1⅛-inch 6 x 19 rope lasts for more than two months working two shifts a day. The shovel operator says that no other rope gives as good service as TIGER BRAND. Contractor: Adam Eidemiller on Pitt Parkway East.

DIGGING OUT A BURNING MINE at the intersection of the Pitt Parkway East and the Wm. Penn and Lincoln Highways. 80,000 cu. yds. were removed from this one cut by a shovel equipped with TIGER BRAND Wire Rope. Contractor: Adam Eidemiller, Greensburg, Pa.

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Excellay Preformed

UNITED STATES STEEL

Big Producers !

NEW "CAT" DW20 TRACTOR AND W20 WAGON
NEW "CAT" DW21 TRACTOR AND NO. 21 SCRAPER

THESE power twins are the largest earthmovers ever engineered by "Caterpillar." They combine high speeds with high capacities to meet today's demands for increased production for both civilian and military needs. They give construction men the choice of two or four wheels in husky hustlers built to stand up under the toughest going.

For big production on long hauls, you can't beat the 4-wheel "Cat" DW20 with its top speed of 26.6 m.p.h. The DW20 offers two matched trailer units. The W20 Wagon—heaped capacity, 25 cu. yds. And the No. 20 Scraper—heaped capacity, 19½ cu. yds. The DW20 is also available with the No. 20S Bulldozer.

For big production on jobs best suited to 2-wheel rigs, you've got the edge with the "Cat" DW21. Trailing the No. 21 Scraper, which has a heaped capacity of 19½ cu. yds., its top speed is 20 m.p.h.

Both these speedy giants are powered by the new 6-cylinder "Cat" Diesel Engine, producing 225 HP. available at the flywheel. For complete data, see your "Caterpillar" dealer. Under today's conditions, it's a good move to talk over your requirements *now* with him. He's as close as your phone for service or information—call him today!

CATERPILLAR, PEORIA, ILLINOIS

CATERPILLAR
REG. U. S. PAT. OFF.

DIESEL ENGINES • TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

Look for the name AMSCO® on the dipper you specify...

Amsco Engineering — plus Amsco Manganese Steel Construction — means more efficient, more profitable shovel operation.

Profit is determined by *handling costs per yard,* and here are 2 important reasons why you can lower those handling costs with AMSCO Dippers:

Austenitic Manganese Steel—For Longer Life— The more you use an Amsco dipper, made of manganese steel throughout, the harder it gets! Surfaces that are subject to impact and abrasion actually work-harden and take on a high polish for added wear-resistance.

Manganese Steel—"the toughest steel known"—withstands the most severe breaking stresses.

AMSCO Engineering—For Better Operation— Years of Amsco design experience bring you a *complete line,* from which you can select dippers "custom-engineered" to your own requirements . . . for deep penetration, full loading and positive dumping. Whether you need manganese steel Welded, Missabe, Renewable Lip types, or special designs for unusual service, *you'll get longer wearing life and greater economy when you specify Amsco.*

NOW! Prompt delivery of Amsco Dippers and Parts

AMSCO®
WELDING PRODUCTS

The fast, low-cost way to get worn or damaged equipment back in service.

Amsco hardfacing rods make important on-the-job savings . . . keep down time at a minimum. Contact your supply house or Amsco representative for information on the complete Amsco line of Welding Rod, Weldments and Repointer Bars.

Get the facts on the complete Amsco Line...

This 40-Page booklet is packed with information on Amsco Dippers, and parts for shovels and draglines. Write today for your free copy . . . ask for Bulletin No. 547 DS.

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AMERICAN MANGANESE STEEL DIVISION
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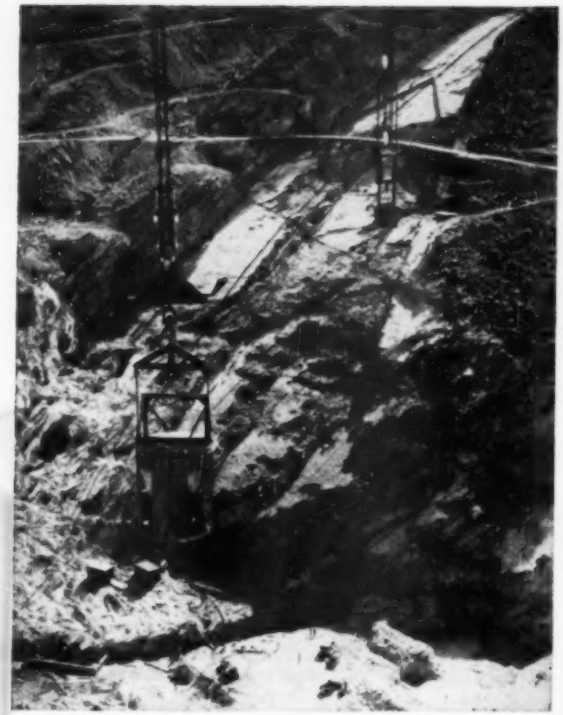
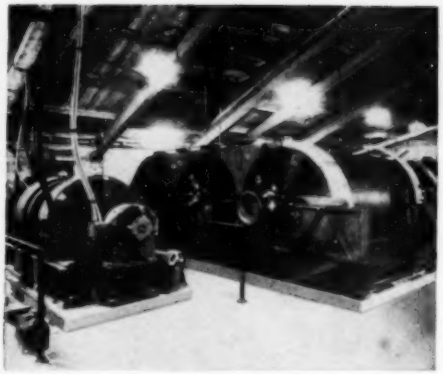
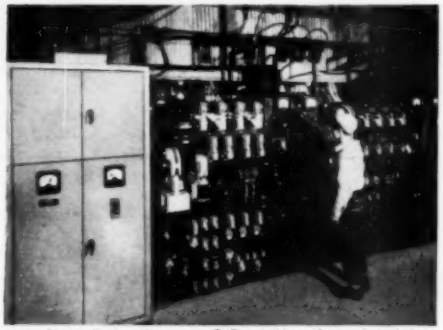




▲ Aerial cableway hoist room showing hoist drums and one of three General Electric motor-generator sets used to drive the powerful G-E 500-hp hoist motors.

◀ Concrete in 8-cubic-yard buckets is moved nearly half a mile on a G-E powered aerial cableway for placing concrete in the construction of Hungry Horse Dam.



Attendant adjusts voltage on G-E switchboard panel. At left is G-E Cabinetrol. Installation provides variable voltage for smooth, accurate speed control of cableway hoists.

BIG LIFT carries concrete across a canyon ... *Electrically*

G-E Powered Aerial Cableways Vital Link in Concrete Placing at Hungry Horse Dam

Carrying 2,900,000 cubic yards of concrete across a half-mile canyon! It's only one of the big jobs at which the General Shea Morrison Construction Company works night-and-day to complete Hungry Horse Dam on schedule for the Bureau of Reclamation. But they're licking this and the many other problems that face them on the Flathead River site in northwestern Montana. Their answer lies in the use of co-ordinated electric equipment—G-E substations, motors, motor-generators, Cabinetrol*, and switchgear, carefully integrated into one complete system.

Construction equipment electrified by General Electric can provide *you* with new on-the-job flexibility, speed, and safety. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

*Reg. trade-mark of General Electric Co.

Ask him Today!

Whether you buy or build construction equipment, your G-E representative can show you how to do a better job—at lower cost—by complete electrification. Write him now, and he'll call on you at your convenience.

Electrified Construction
BETTER PRODUCT
LOWER COST

GENERAL ELECTRIC

664-14

OUT FRONT IN OUTPUT

38-B DRAGLINE
clears building site.
51-B SHOVEL
excavates for housing project.

15-B CLAMSHELL
digs sewer line.
22-B CLAMSHELL
finishing parkway grade.

BUCYRUS-ERIES

Years of rugged service on all kinds of construction jobs have proven to excavating men everywhere that Bucyrus-Eries are out front in output. With Bucyrus-Eries you get durability for sustained operation; you get the capacity you need to handle jobs most efficiently; and, you get convertibility to handle a wide variety of jobs effectively. See your Bucyrus-Erie distributor for full information on Bucyrus-Erie gas, diesel and single motor electric ¾ to 4 yard excavators.

10-B DRAGSHOVEL
prepares fuel tank installation.

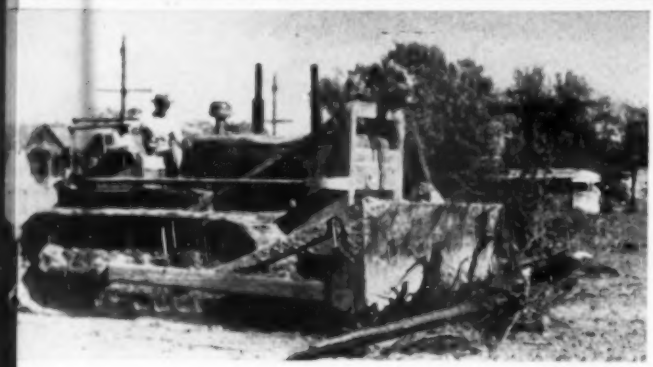
54-B CRANE
sets steel for highway.

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

Ft. Worth Trai

• Loading excess material from ramp haul road to Euclid Dumptrogon is Bucyrus-Erie 38-B dragline. City of Ft. Worth rises in the background.



Excavating 750,000 yards of common material, J. W. Moorman and Son, Muskogee, Okla., contractors are working a 10-hour shift, seven days a week, on the first contract let for the construction of the new Ft. Worth Floodway.

By Edward F. London

• Early in the job, on clearing operations, International TD-24 with Bucyrus-Erie blade piles debris for burning.

• Below: International drawn and Allis-Chalmers pushed Bucyrus-Erie B-250 scraper rapidly peels a heaping load from the river bank.

ns The Trinity

• Train loading techniques in this heavy, moist earth drew 26 and 27 yards at every pass.

• Scraper deposits excavated material on disposal area beyond the levee.

STARTED Aug. 7, 1950, on a low bid of $89,999, against a Corps of Engineers basic estimate of $159,564, the initial Ft. Worth, Texas Floodway contract calls for widening and straightening the channel, and improving existing levees of that section of the Trinity River that meanders through much of industrial and residential Ft. Worth.

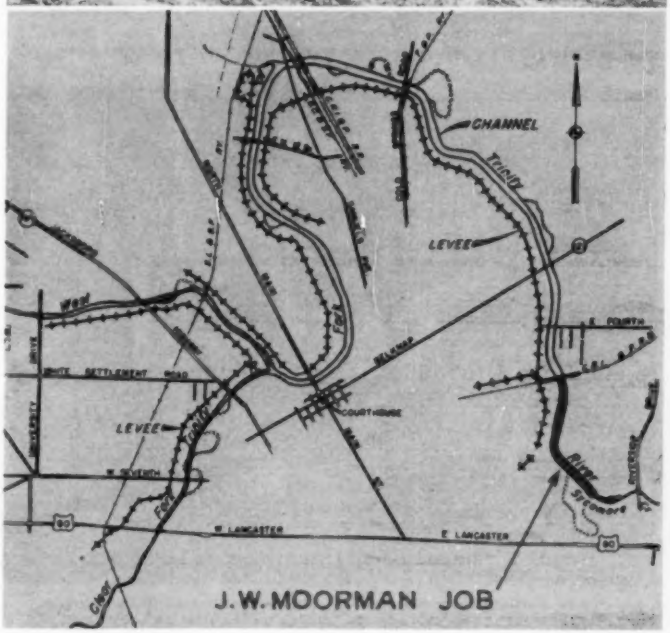
In spite of miserable weather and several tough breaks, a smooth running organization, headed by J. W. Moorman, and Jim Moorman, his son, expects to complete the first unit of the huge project, in the allowed time of 180 days.

This first contract, about 80% complete on November 11, 1950, will eliminate the looping bend and shorten the water course that extends from Bauerline to the Rock Island Railroad Bridge, north of Lancaster Street.

Compared to the huge earth-moving job at Lavon Dam, performed by the same contractor, this job is small — involving only ¾ million cu. yds. of excavation. But J. W. Moorman and crew will tell you that it has been a tough trip and far from simple.

7 Million Yard Job

Total excavation in the planned improvement of the entire floodway and channel project will run to 7 million yards, which is almost as much as that required for the construction of Benbrook Dam, part of the Trinity River flood control effort, under the Ft. Worth district office. The improved channel will be 58,385 feet long. New and improved levees will average 13 feet above natural ground. Numerous highways and railroad bridges and pub-



• Final section along river bank is handled by Model 6 dragline. Old levee, which is being improved under this contract, is at top right.

• John Keel, left, in charge of disposal area, consults with George Blackard, superintendent. Behind them, Bucyrus-Erie 38-B dresses river bank and loads excess material to Euclid Dumpwagon.

• L. B. Sawyer operates contractor built portable grease and fuel rig to service all equipment once each day.

lic utilities will be altered to conform to the improved floodway channel.

Nearly completed $12 million Benbrook Dam and Reservoir, on Clear Fork of the Trinity River, will be a great contributing factor in prevention of future floods, but in itself will not afford complete protection. However, this program also represents vital units in future protection of the city of Ft. Worth against storm water drainage from the West Fork area of 2,627 square miles.

Flood Control Overdue

Since Lake Worth was not built as a flood control reservoir and does not have sufficient storage capacity to hold back flood waters, the 122 square miles of drainage area below Eagle Mountain could develop into a damaging flood if a storm concentrated in that area.

The disastrous flood of May 17, 1949, is still fresh in the memory of Ft. Worth's citizens. It was the second major flood in 20 years and everybody in the entire city felt the impact of the damage which amounted to between $15 and $20 million. Financing the current project, Ft. Worth citizens voted a $7 million bond issue, the federal government has allocated $4 million and the state has remitted ad valorem taxes in Tarrant County for two years.

Clear Out Trees

On the Moorman-held contract, clearing 58 acres of trees and brush from both sides of the river and disposal area was the first order of business. Fourteen-hp circle saws and six-hp chain saws cut all trees to ground level. Brush and debris were decked for burning by International TD-24's with Bucyrus-Erie bulldozers. This part of the job was tough because wil-

low trees lined the river bank on both sides. A Northwest model 6 dragline was used to snake out the roots before the bulldozers could continue stripping the area.

Much of the excavating equipment was moved to the site from Lavon, where Moorman was finishing a contract. Three 22-yd. (plate measure) Bucyrus-Erie B-250 scrapers, pulled and pushed by International TD-24 crawlers, handled the bulk of the excavating in the new channel, which will be 1,200 feet long, 200 feet wide at the bottom and 31 feet below ground level.

Usually working from north to south in passes 1,200 feet long, the scrapers moved their loads to the disposal area, unloaded without stopping, and then returned by another route for the next pass.

Hauling Moves Fast

In the disposal area, TD-24 crawlers with Bucyrus-Erie bulldozers, pushed the muck into the old river channel. They were constantly on the move, as not only the B-250's, but also eight 16-yd. Euclid Dumpwagons were bringing dirt into the area at top speed. The Eucs were carrying spoil scooped from both banks of the river by a Bucyrus-Erie 38-B dragline swinging a special 2-yd. bucket on a 45-ft. boom, and a Northwest 6 dragline with a 2-yd. Hendrix bucket and 45-ft. boom.

Much of the excavated material was used to improve portions of the existing levee and fill the disposal area beyond the levee on the west side of the river. The levees were widened by dumping borrow from the excavation and compaction was obtained by the travel of the hauling equipment. The levees now have a crown width of 100 feet and are dressed to a 3:1 slope on the land side and 2:1 on the river side.

No blasting or drilling was necessary on this job. Enough borrow is being obtained from the excavation to improve the levees and fill the old river bed in the disposal area and level portions of the area west of the levees.

Cut Trench in Channel

The Northwest 6 dragline was also used to cut a trench 20 feet wide by four feet deep in the bottom of the new channel. This ditch, according to the Corps of Engineers, will help keep swift water in the center of the channel, thereby eliminating much erosion.

To obtain a haul road to either side

Continued on page 45

• Casting a 2-yd. bucket, Northwest 6 dragline scoops mud to the Dumpwagons which haul straight ahead along bench to disposal area.

• Euclid bottom dump gets another load from 38-B dressing levee. Banks are dressed 3:1 on the land side and 2:1 on the river side.

• On the way to disposal area, Euclid wagon passes TD-24 at about 30 mph. Physical characteristics of job permitted high speed hauling.

Coal Uncovered on the Double

At the Brookside-Pratt open pit coal mine in Alabama, a shovel was teamed with a dragline for overburden removal, and stripping efficiency increased 40%. Dragline bucket maintenance was reduced. The 18-man crew has been removing hard rock overburden at a 2,500 yards per-man per-month clip.

ALL'S quiet. Suddenly . . . WHAM . . . and 23,000 yards of hard rock overburden are ripped off the highwall. The smoke rolls out, the strippers move in, the blast hole crews drill on, and the outcrop stripping operations at the Deepwater mine near Nauvoo, Ala., keep humming.

And hum they do. Here, an effective dual machine stripping combination spoils out as high as 60,000 yards a month. While this in itself is a splendid record considering that two-thirds of the average 30-ft. overburden is a hard shale formation, the hum at Deepwater is kept on key by a safety record which shows not one man hour has been lost to injury in the past four years!

In charge of the 18 men who work this pit for the Brookside-Pratt Mining Co., Birmingham, Ala., is Supt. H. P. Culligan. To him most of the credit can be given, as J. H. Moore, vice-president will tell you. Through efficient application of men and machinery, proper shooting methods, careful selection of employees, and rigid maintenance requirements, Culligan has made the difficult and comparatively small open cast mining operations at Deepwater highly efficient.

Brookside-Pratt began open cast stripping operations at the Deepwater mine in April, 1942. Since then an approximate 260,000 tons of high grade domestic bituminous coal, having a 14,000 to 15,000 B.T.U. content, has been recovered from a Jefferson seam averaging 26 inches deep. Recovering this coal involved the removal of an approximate 4,602,000 yards of overburden — using the average 1949 ratio of 17.7 cubic yards of overburden removed to the ton of coal recovered as the basis for determining this total. About 60 acres or approximately 132,000 tons of coal are presently scheduled for recovery. However, current prospecting is adding to this figure continually.

Strip Year 'Round

Stripping operations are handled the year around with a dual machine combination—a 2½-yd. Bucyrus-Erie 54-B dragline powered by a 206-hp Buda diesel and a 1½-yd. Bucyrus-Erie 37-B shovel powered by a Caterpillar 174-hp diesel.

On the other hand, loading operations, which were a year around activity, until two years ago, are presently conducted during a six month period, usually from December to June. This change has been brought about by a recent decrease in the demand for domestic coal throughout the South and a desire to gear production to a fluctuating market. A Bucyrus-Erie 22-B diesel shovel equipped with a special 1¼-yd. coal loading dipper handles this assignment, and when not loading, is kept busy digging drainage ditches, building and maintaining haul roads, handling waste rock from the tipple and other general lifting and digging jobs. The 22-B is powered by a 130-hp General Motors diesel.

Work Two Cuts

At the time of EXCAVATING ENGINEER'S visit, the 22-B was scheduled to resume its coal loading assignment in a matter of weeks. More than 20,000 tons lay ready to be loaded — the amount of coal uncovered by the strippers since the loader last handled this assignment.

To uncover this coal, the strippers cut out some 3,600 lineal feet of overburden along crop lines which are sawtooth in shape, following a circular pattern. Stripping is done in two shifts from 7 AM to 9:30 PM. Two cuts were made one-half mile apart. The first

• Left: Dragline-shovel stripping combination piles it up fast despite thick, rocky cover at Deepwater.

• At the back end of a quarter-mile cut, a 1½-yd. Bucyrus-Erie 37-B shovel uncovers a 26-in. Jefferson seam — feeding a 54-B dragline's 2½-yd. bucket in the process.

• Above: Deepwater hums; a 2½-yd. Bucyrus-Erie 54-B dragline pulls in a load dumped by the 37-B while a D7 Caterpillar bulldozer levels off blasted overburden.

• Left: Team work pays off in fast, heaping loads. The 37-B keeps the cut clean and supplies the dragline with a steady stream of material.

• Above: Big, hard shale like this was rough on dragline buckets before the 37-B shovel joined stripping operations.

• Below: Working ahead of the stripping team, these Paramanco drills prepare some 45,000 yards monthly. Two-thirds of highwall is hard rock shale.

• It's the job of this Paramanco vertical VF4 to drill two rows of 5-in. holes to a point four feet above the seam.

• Drilling a row of 5-in. holes spaced 15 feet apart is handled by Paramanco V4 horizontal drill. Wooden platform makes it possible to drill four feet above seam.

when completed was one-half mile long, 40 feet wide, and averaged 35 feet deep. The other — which was being worked at the time of this visit — was a quarter-mile long, 40 feet wide, running through an average 38 feet of overburden. The maximum overburden encountered was 50 feet deep and the minimum 19 feet deep. All overburden is spoil cast with the previously depleted seam — which always lies adjacent to that portion of the highwall being removed — used for the spoil bank.

Team Up on Spoil

After blasting, the 54-B and 37-B swing into position ready to handle stripping as a team. On the back end of the seam the shovel goes to work. Here the 37-B, equipped with 32-ft. boom and 24-ft. dipper handle, uncovers and squares away the 40-ft. seam, dumping overburden to the edge of the spoil bank. Directly in line with the shovel, situated on top of some 20 feet of overburden that's been blasted off the highwall into the adjacent depleted seam, sits the dragline, equipped with an 80-ft. boom. From this position, the 54-B removes overburden from the pit, taking advantage of the stock-piling done by the shovel. And, since the 37-B's dig-swing-dump cycle is faster, there's ample overburden stocked along the edge of the spoil bank to fill the 54-B's 2½-yd. bucket in short order. In fact, with this arrangement, it frequently happens that

Continued on page 42

• Powered by a Caterpillar 105-hp diesel engine this D7 bulldozer is shown leveling a path for the horizontal drill.

• When not loading coal, a Bucyrus-Erie 22-B shovel, equipped with a special 1¼-yd. coal loading dipper, is busy on a number of jobs like filling in low spots or maintaining the haul road.

Tunnel Spans Campus in Five

• Above: In front of the first unit on the new Laval University campus, a ½-yd. Dominion clamshell removes material just ahead of the drainage pipe laying crew.

• Below: Secondary drilling crew uses Sullivan drills with 2½-in. bits to clear rock from bottom of trench. Although construction of buildings will be in progress for years, all blasting for foundations has to be completed immediately.

FINANCED by old grads, businessmen, private citizens and industry, Laval University in Quebec is embarking on a tremendous building program that will eventually cost $150 million. First step in expansion of the campus to mile-square dimensions is construction of a 12,000-ft. utilities tunnel to service the 23 buildings scheduled for eventual erection.

Komo Construction Co., Quebec, has a $6 million contract calling for completion of tunnel excavation and construction, excavation work for storm sewers, roads, streets, water mains and all grading by 1954. Average cost of all excavating operations including grading, blasting and hauling was established at 98c per yard.

Clearing of the heavily treed bushland, half a mile from the city limits, on the south side of St. Cyrille Street, was begun in September, 1949. Blasting, moving and grading is now underway and foundations for the first few buildings will be finished by spring. Before these foundations could be laid, the tunnel job had to be completed and many miles of new roadways, streets and storm sewers had to be built.

Six Caterpillar D8 bulldozers and one LeTourneau rooter cleared trees and brush which Euclid and International trucks hauled from the area. Four 12-yd. Carryalls aided the bulldozers in leveling several small hillocks of earth and shale. Three Caterpillar No. 12 graders prepared the site for roads and streets and in May work began on the tunnel.

Tunnel Insulated and Reinforced

Specifications called for a tunnel 12 ft. 3 in. by 9 ft. 2 in. outside dimensions and 9 ft. 7½ in. by 7 ft. 2 in. inside, to be reinforced throughout with ½ and ¾-in. steel rods and the roof insulated with 1½-in. cork slabs. The depth of tunnel excavation was figured at 12 to 18 feet and the width 18 feet with the longest straight stretch running 3,900 feet.

• Seepage and storm drain is 12-in. concrete pipe, laid below tunnel floor. Entire tunnel necessitated removal of 115,000 yards of earth and rock.

Months

On the new mile-square campus of Laval University in Quebec, Canada, Komo Construction Co., Quebec, trenched out 2,200 cubic yards a day to provide a 12,000-ft. long utilities tunnel for the expanding school.

by E. T. Nesbitt

In 4½ months of rough winter work one ¾-yd. Link Belt Speeder and five ¾-yd. backhoes (one Marion, one Dominion, one Speeder and two Lorains) handled 52,000 yards of earth excavation and 63,000 yards of blasted rock. Since all shale and earth was used as fill, four Euclid 15-yd. trucks hauled the 2,200-yd-per-day output comparatively short distances, seldom more than 2,000 feet.

Short Loads Near Building

On the outcropping, rock breaking crews used three Thor wagon drills equipped with 2½-in. bits to sink holes six to 18 feet. Proximity of a new $1¾ million Forester Engineering building at one point necessitated use of short loads and delayed-action caps, but a larger number of holes were drilled to partly compensate for this.

Although construction of buildings will be in progress for several years, blasting for all foundation work had to be completed immediately. Tunnel blasting alone consumed 15,000 pounds of Forcite 40% explosive per week.

Before concrete work could begin, an 18-in. trench three feet wide had to be dug along the entire length of the excavation. In this sub-ditch two 12-in. pipe lines (for infiltration and drainage purposes) were buried.

As soon as these pipes were laid, construction began on the 12-in. thick floor of the tunnel. Concrete workers were put on a 10-hour shift to beat the early (October) frost in Quebec.

Averaging about 90 tons per week, some 2,000 tons of reinforcing steel were used, all in ½ or ¾-in. rods. Concrete was poured to a 12-in. thickness and allowed to dry for 24 hours.

Then a framework of 2x4's and 8-ft. panels five-eighths inch thick were erected as forms for the top and sides. A preservative was applied to the wood

• Soft shale rock is scooped out of tunnel excavation by ¾-yd. Dominion backhoe, while drainage piping is being laid below base.

• Erection of plywood panel forms for sides is done in sections, re-using the forms as often as possible. Two thousand tons of reinforcing steel in ½ and ⅝-in. rods support the concrete.

• Wooden forms ready for concrete pouring have 1½-in. cork slabs tacked to top and upper sides. These will remain imbedded in the concrete tunnel as insulation against heavy frost.

• Section of completed concrete tunnel ready for installation of water and sewer lines. The tunnel required 16,000 yards of concrete.

after each pouring and the panels were used 27 times.

Before concrete was poured for the walls and roof of the tunnel, 2x3-ft. cork slabs 1½ inch thick were applied to the panels, across the ceiling and three feet down both sides (the maximum depth of frost penetration in Quebec). As this work proceeded, wooden cages were slung from the top of both sides of the tunnel to hold the 11-ft. lengths of Korduct asbestos pipe to be embedded in the walls.

Outer forms were positioned and braced with 4x4's and 1-yd. Foote buckets moved in to pour. Concrete was allowed to dry for 24 hours before removal of forms. This was difficult work because the cork slabs had to be retained in the ceiling and the panels had to be cared for so that they could be used again.

200 Feet of Concrete Per Day

The cycle of erection of forms, pouring of concrete and removal of forms was carried out in 50-ft. sections, being completed at the rate of four sections a day or about 200 feet for 10 hours' work. The concrete paver was serviced by three International trucks.

Concrete came from an Erie 100-ton capacity plant producing 22 yards per hour or 220 yards per day. A Caterpillar D8 dozer and a Link Belt Speeder ½-yd. clamshell fed blasted rock to a Badger rock crusher to supply the large plant.

Some 16,000 yards of concrete were poured on the tunnel job and average volume of concrete per lineal foot was 1.4 cubic yards.

Openings were left in the tunnel every 400 feet for rooms, 26x21 feet, to be used in connecting the utilities to each separate building. After completion of each room and installation of T-joints for sewers and water mains and other utilities, both the branch entrances and pipe ends were sealed up.

Lay Storm Sewer

With main sections completed, a 36-in. concrete storm sewer was laid along one side of the tunnel floor, at the base of the sidewall and an 8-in. cast iron water main was connected. Wiring crews put in temporary lighting and strung power and telephone cables.

As this was being done, installation of heating pipes began and eventually all piping will be placed along the entire length of the concrete shell. Many branch tunnels connecting other build-

ings will be constructed later.

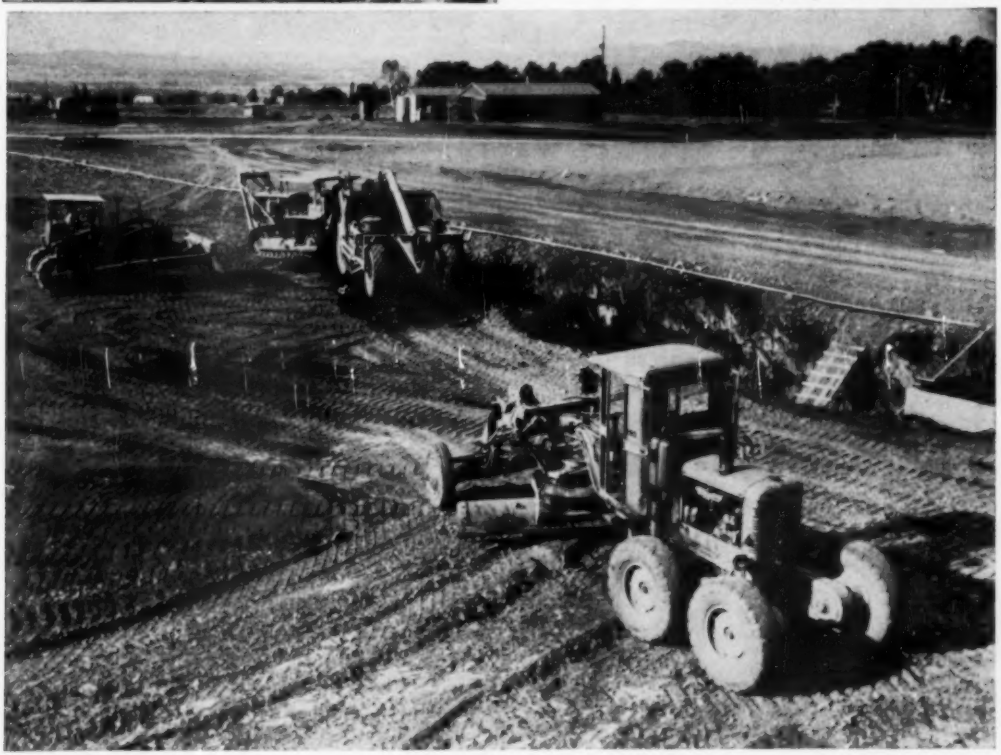
Outside concrete surfaces were coated with a water resistant compound and the tunnel covered with fill to a depth of two feet.

Engineers on the job for Komo Construction Co. are Charles Demers, Richard St. Hilaire and Horace La Plante. Consulting engineer is Maurice Royer and the Rector of Laval University is Msgr. F. Vandry. Chairman of the building committee is Canon Ernest Lemieux.

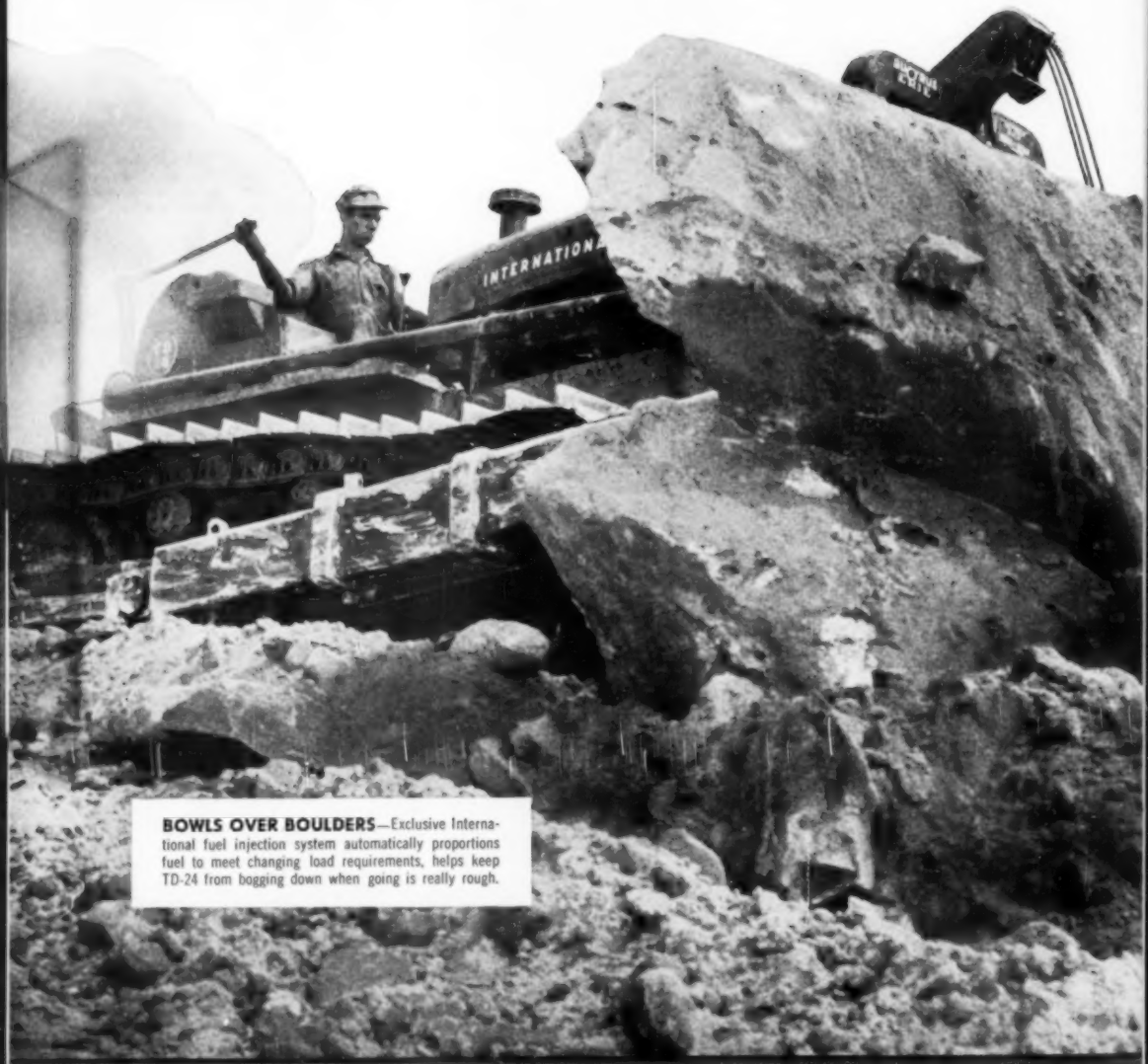
• Pouring concrete for the roof of the tunnel, a tilt-boom Foote mixer puts out a yard at a time. Feeding aggregate to the hopper is an International truck.

• Left: Bucyrus-Erie Bullgrader on TD-18 International tractor controls aggregate for Erie 100-ton capacity stationary plant.

• DB-drawn Carryall dumps fill at edge of tunnel and TD-18-mounted Bullgrader pushes earth into trench. Adams D7 stands by to grade land to smooth finish.



Pushover for



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The champ makes it look easy. The champ has the crowd with him. The champ takes on all comers.

What makes the champ the champ?

In a man it's guts, strength, skill and a fighting heart.

In the TD-24 it's gears, metal and go, translated into irresistible strength, stamina and "handle-ability."

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148 maximum drawbar horsepower—more than any other crawler.

Eight forward speeds, eight reverse.

Speeds up to 7.8 mph in either direction.

Synchromesh transmission—you "shift on-the-go."

Exclusive International push-button, all-weather starting.

Planet Power steering, finger-tip control for pivot turns, feathered turns, turns with power on both tracks plus instant shift up or down one gear without declutching.

Reserve torque to make the TD-24 hang on to overloads and walk away with as much as ten cubic yards on the blade.

The word is out on the "grapevine." At conventions, bid-openings, contract-lettings, contractors are telling each other how the TD-24 does more work with more speed—has more lugging ability—moves more pay-dirt faster than any other crawler on the market.

Want more facts . . . more proof? Ask your International Industrial Distributor for the low-down on the TD-24. You'll be a TD-24 man from then on in!

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There are models for your every hauling requirement . . . body designs for every type of material . . . and the speed and capacity to haul bigger loads faster and at lower cost per ton or yard moved.

Euclid owners know that they can depend on prompt, efficient service from a world-wide distributor organization. The services of a hauling equipment specialist and genuine Euclid replacement parts are available to keep operating and maintenance costs at a minimum.

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Rear-Dump "Eucs" have capacities ranging from 18 to 34 tons with diesel engines of 125 to 300 h.p. This 15-ton model, with top extensions, is being loaded on a highway construction job in Massachusetts.

Euclid Scraper picks up a heaped load on an airport job in North Carolina. Capacity is 18.5 cu. yds. struck . . . 275 h.p. diesel engine.

Bottom-Dump Euclids range in capacity from 13 to 25 cu. yds., have diesel engines of 190 to 300 h.p. This "Euc" is hauling approximately 30 cu. yds. on a big route fill dam in Colorado.

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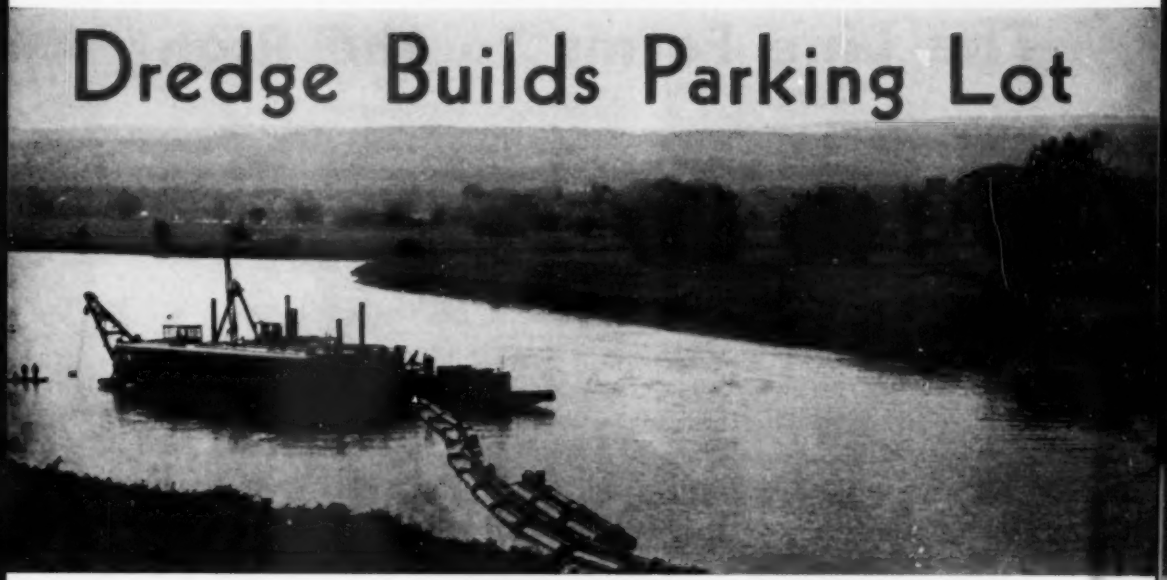

by Glen Dalton

• Hauling a parking lot up 19 feet from the bed of the Mohawk River Barge Canal is New York State dredge with 15-in. pump and 500-hp diesel motor.

HYDRAULIC dredging operations in the Mohawk River Barge Canal at Schenectady, N. Y., will soon make additional parking space available in the congested downtown area. The project, sponsored by local community groups, will result in the pumping of approximately 25,000 yards of clean river gravel into a low lying bank area sufficient for parking about 400 automobiles. The area to be improved is roughly 700 feet long and 200 feet wide. It is part of the Barge Canal terminal property and lies adjacent to the Great Western Gateway Bridge in the rear of the Hotel Van Curler.

The pumping is being done by one of the New York State Department of Public Works dredges. The dredge houses a 15-in. dredging pump directly connected to a 500 hp diesel motor. A cutter and screen are attached to a 20-ft. boom on the suction side and these are able to excavate to a depth of 19 feet below water level.

For the pumping job, approximately 2,500 feet of 15-in. steel pipe is used. The pipe line extends across two channels separated by an island before reaching the spoil area. Over the water, 20-ft. sections of the pipe are pontoon floated and jointed together by rubber sleeves to prevent leakage. The average life of the pipe is about six months when handling the highly abrasive gravel.

One of the first jobs was to pump enough material along the low side of the area to form a settling basin. This prevented the first output of river mud from flowing back into the river. Then, as workmen constantly move the discharge pipe, fill is evenly spread over the area. Maximum depth of fill is five feet, tapering to nothing at the river's edge.

The project will result in a deeper and wider canal channel for the state and a much needed parking lot for a congested downtown area.

• Covering a 200 x 700-ft. area with 25,000 yards of clean river gravel will provide space for 400 automobiles.

• The 15-in. steel pipeline extends 2,500 feet across two channels and an island.

The Line Forms to the Right...

TALK to operators who have handled both the BIG RED combination and other dirt moving units. Ask these operators which they prefer and they'll point to the BIG RED hookup of an International TD-24 tractor and Bucyrus-Erie B-170 or B-250 scraper.

They'll tell you *why*, too. This outstanding dirt moving team is bigger and easier to operate, does things no other combination can do. It comes up with a good day's work every time out, even in wet slippery weather. It averages more dirt per trip than any other crawler tractor-scraper outfit, makes one or two extra trips per hour. No other tractor is bigger, more powerful, more flexible, or easier to handle. The scraper is perfectly matched to take full advantage of this great power. It handles easier, loads quicker, dumps faster and cleaner than other scrapers.

Your operators will "go for" the championship BIG RED team, too. Even more important, they'll use it to cut your dirt moving costs. Ask for complete information!

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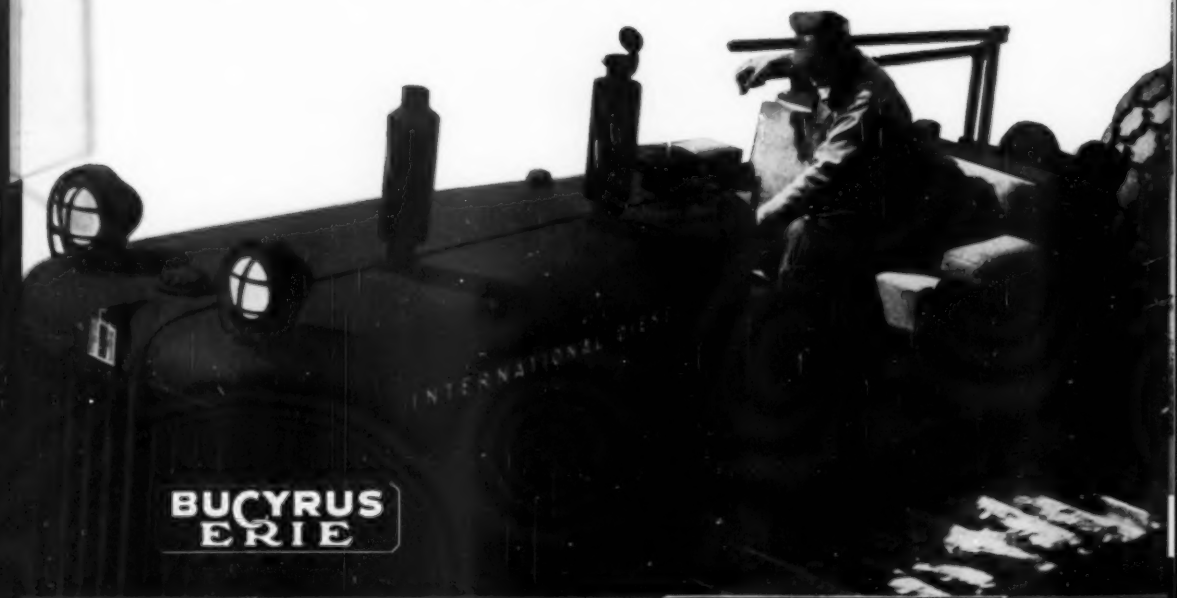

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News from the Field

Algeria Saves Its Rain

To make the most of its scant annual rainfall, the government of Algeria, North Africa, has cut a zig-zag pattern of trenches into many of the hillsides in the northern part of the country. The trenches, or banquettes as they are called locally, begin as near to the hilltop as practical and travel in a multiple Z design to the base.

As can be seen in the photograph on the cover, the drop from the top end of a banquette to its lower end is only a few feet. The purpose of the trenches is not to conduct the rainfall to the bottom of each hill but rather to trap the water and absorb it into the ground. Keeping the grade low helps accomplish the purpose. Water collecting in the trenches moves slowly and has more time to soak into the ground.

Soon after the banquettes are completed, the outside border is planted from top of hill to bottom in fig and olive trees. Planting and growing trees as well as cutting the banquettes is under the supervision of Defense et Restauration de Sols (Soil Conservation), a department of the Algerian government.

Other Uses, Too

Besides conserving water, the program serves three other purposes: It prevents the erosion of topsoil. The hills had previously been denuded of vegetation and trees and the rich layer of soil was being gradually washed away. The watercourses and the new crop of trees will prevent erosion.

Although a rarity, there were from time to time heavy downpours which caused flash floods in the valleys. The water absorbing qualities of the new terraces will do much to prevent recurrence of flood destruction. Finally, the trees will furnish a fine crop of fruits for the people living in the area.

In the Department of Oran, the easternmost of the three Algerian sections, the work is under the direction of Supervisor Francais Bonnett. It is in his territory, on a hillside overlooking Peregraux, that these pictures were taken.

Five Crawlers Per Crew

Mr. Bonnett has several crews at work on the project here. Work proceeds in this manner: Surveyors plot and stake out the course of the trench. They are followed by the tractors; there are generally five of these machines assigned to each crew. In the area around Peregraux, they were mostly International TD-14 crawlers with Bucyrus-Erie hydraulic Bullgraders.

The tractor works with the blade angled at all times. It starts a cut, the width of the angled blade, along the side of the slope, following the pattern laid out by the surveyors. The cut is made so that the banquette slopes inward toward the mountainside, forming a water trap. This V shaped cut averages three feet in depth at the inside bottom of the V. At the end of each terrace (they run up to several hundred feet in length) the tractor pivots around and the angle of the blade is reversed. Several passes are usually necessary to complete one stretch of banquette. They are spaced about four meters (12 feet) apart and most of the hills in this territory range up to 1,500 feet in height.

Shallow Blasting

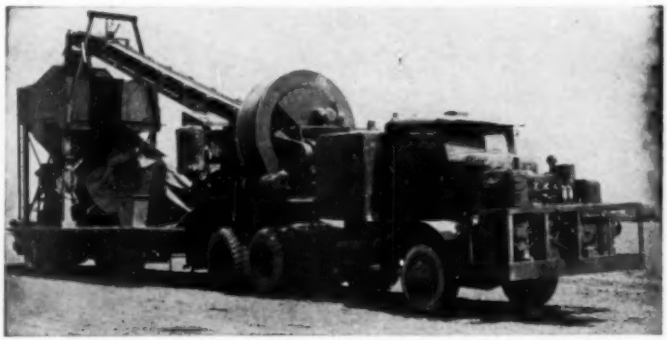
In each group, there is also a greasing crew to keep equipment lubricated, a blasting crew to break up outcrop rock, a tractor helper for each machine and a foreman. Progress varies from 1,000 to 5,000 feet of trough per day, dependent upon ground conditions. Tractors are refueled at the bottom of the hill from barrels of diesel fuel brought to the job site.

Mr. Bonnett's group will work over the hills in a large section of his department for several weeks, then will move on to another territory. After the program is begun, staffs are organized to supply the continuous maintenance which keeps the banquettes in good shape.

School Trains Operators

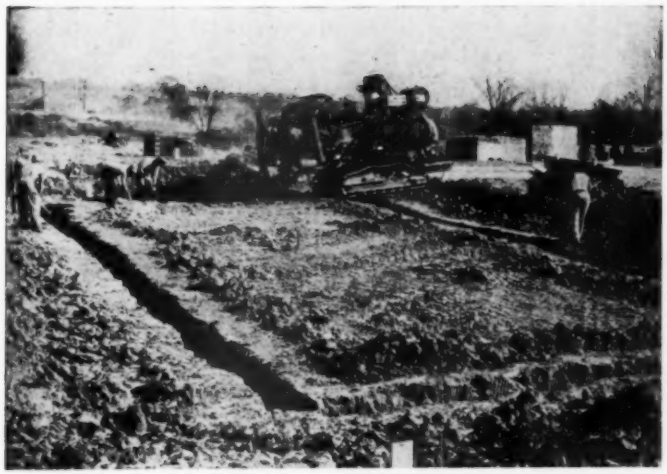
To train natives in tractor operation, the equipment distributor set up a three week school. Two weeks are devoted to mechanical shop instruction—greasing, adjusting, electrical system, cooling system, etc. Then a week is spent on intensive operational training. Approximately 20 men are instructed in each class.

Since Algeria began the conservation program several years ago, the example has been followed by countries throughout North Africa — so successful have been the results.



Special Rig Lays Concrete

Pecos, Texas is in an important irrigation region and, to conserve the water, irrigation ditches are usually lined with concrete. F. M. Reeves & Sons, Inc. of Pecos, has developed a very interesting portable apparatus mounted on a big truck-trailer for laying concrete in these ditches at the rate of 650 linear feet per hour. A special molding box is used which lines the ditch with concrete on the two slanting sides, three feet across at top, one foot wide at bottom, and two feet vertical depth. To power this traveling mixer use is made of two Ready Power 25-kw generator sets operated by International UD-9 diesel power units, which provide electricity for 14 small motors up to 10 hp in size.



Ditcher Digs Foundations

MacDonald Construction Co. and R. & M. Construction Co. of St. Louis, Mo., have speeded up work on a large housing project with a Barber-Greene model 44-C ditcher. The machine is digging foundation footings for all of the 211 four-family apartment houses in the St. Louis development.

There are three sizes of buildings in the project. Each apartment unit will consist of one, two and three bedroom apartments. The smallest unit has a foundation 25 ft. 8 in. x 55 ft. 6 in. and the largest will be 27 ft. 2 in. x 87 ft. 1 in. All foundation trenches are 16 inches wide and vary from 30 to 78 inches in depth.

To excavate the foundation trench, the ditcher begins its cut along one side of the selected location, following a grade line for the full length of that side of the building. It then moves to a position at right angles to this first cut. The boom is lowered into the end of the trench and the ditcher begins a second leg of the foundation. After this cut has been completed, the process is repeated for the third side of the building, and again for the fourth. As the ditcher approaches the point where it began its first cut, a plank, for the inside crawler, is laid over the first trench and the machine passes over it, completing a rectangular cut.

The ditcher is ideally suited to this work. Having a vertical digging boom, it leaves no ramps or unfinished portions to be cleaned out by hand at the corners or where a cut is started or completed. Digging each foundation takes from 30 to 45 minutes. After completion, shallow forms are set above ground and the concrete is poured. The buildings are being erected without basements.

Arthur W. Dale

Arthur W. Dale, 53, general manager of sales of the Mining Division of Gardner-Denver Co. died suddenly, on December 18, in his office at the company's plant in Quincy, Ill.

Mr. Dale had been associated with Gardner-Denver Co. since 1916. He first worked in the Denver plant of the company, and then for a number of years he was Manager of the Pittsburgh office. For a period of five years, he was Director of South African operations, with headquarters in Johannesburg, and he was called to Quincy in 1944 to take over the duties of the manager of mining sales. He was a member of the American Mining Congress.

Complete Safety Course

More than 550 employees of mines and industrial plants in Pennsylvania completed the U. S. Bureau of Mines accident-prevention courses in 1950.

Supervisory officials and other employees of 17 different firms were enrolled in the classes and received certificates for their interest in promoting safety. The accident-prevention course for coal mine officials requires attendance at 40 two-hour classes and for other industries, attendance at 20 classes.

Material Handling Meet

Sixteen chapters of the American Material Handling Society will participate directly in the program planned

Continued on page 54

HOW TO GET
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PAYLOADS

This new Erie Catalog makes it possible to quickly choose, from the 4 classes of Erie 2-Line Buckets, the right bucket for *your* crane and material. Perhaps your crane can operate a larger bucket, for Erie alloy welded steel buckets result in greater payloads through scientific bucket weight reduction. Remember, that on bucket work, the cost of the crane and the operator all ride on the bucket. Send for this helpful catalog or outline your conditions and our engineers will make recommendations.

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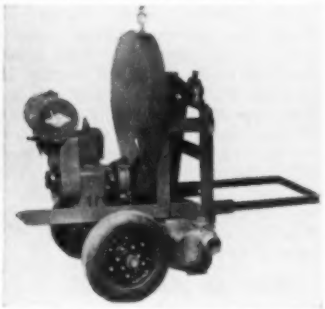
Equipment You Ought to Know About

Gravel Plant

Manufacturer: Universal Engineering Corp., Cedar Rapids, Iowa.

Claims: Plant consists of a jaw crusher, shovel loading hopper with reciprocating feeder and trap grate, feed conveyor, one-deck inclined gyrating screen, delivery conveyor, return bucket elevator, and power unit mounted on a steel gooseneck truck with pneumatic tires. It is designed to produce accurately sized material for road building and maintenance with a single crusher in a closed circuit. Four sizes are available with 916, 1016, 1020 or 1024 jaw crushers in either bronze or roller bearing types.

Light-Weight Pumps



Manufacturer: Marlow Pumps, Ridgewood, N. J.

Claims: Two light-weight diaphragm pumps can be lifted on and off trucks by two men and easily wheeled around difficult construction jobs by one man. Although the new pumps are exceptionally light in weight, they are said to be very strongly constructed to give many years of maintenance free service. Primarily intended for seepage control and ditch work, the lightweight Mud Hogs will lift from levels 25 feet below the pump and handle liquids almost heavy enough to shovel. According to laboratory and field tests by the manufacturer, the 2-in. model 202 Mud Hog will handle up to 2,100 ghp while the 3-in. Mud Hog model 302 will pump up to 3,200 gph. Both models are mounted on a rigid steel chassis equipped with 12x3:00 hollow cushion rubber tires. Cost is almost half that of other Mud Hog diaphragm pumps.

Flow of liquid through the new pump is direct and free from obstructions. Liquid enters through a 2 or 3-in. threaded male suction fitting, passes through a replaceable flapper valve with a newly designed self-cleaning valve seat, flows freely under the diaphragm, is forced through another rubber flapper valve and self-cleaning valve seat, and is then eliminated through a 2 or 3-in. threaded male discharge fitting. The pump body is separated from the chassis by removing only four cap screws, making it exceptionally easy to change diaphragms.

Dual-fuel Diesel

Manufacturer: Detroit Diesel Engine Division, General Motors Corp., Detroit 28, Mich.

Claims: New option on Series 71 diesel engines enables them to burn natural gas in accordance with true diesel high-compression principles. This option is available both on new engines leaving the factory and engines already in use. For the latter a factory-engineered kit is available for the changeover.

The dual-fuel unit has no electrical ignition system. Natural gas is delivered to the cylinder and fired by a small charge of diesel fuel at the top of the compression stroke. The engine instantly adjusts itself between the use of natural gas (with a pilot charge of diesel fuel) and straight diesel fuel in case the gas pressure falls off partially or completely. An automatic shut-off valve activated by the rise and fall of engine oil pressure cuts off the flow of gas when the engine is not in use.

Loader

Manufacturer: N. P. Nelson Iron Works, Inc., Clifton, N. J.

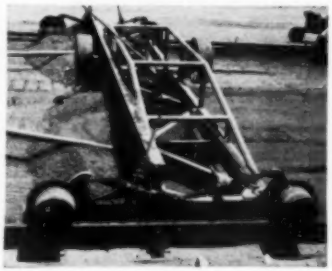
Claims: All-purpose loader is the only machine now in production that will handle sand, snow, gravel, coal, cinders, humus, leaves, salt, etc., without belt changes or use of special attachments.

The new machine is specifically designed for the smaller municipality or contractor with year-round truck load-

ing problems and a limited budget. It serves just as effectively in loading road-patching materials in summer or the heaviest of winter snows.

The Loadall travels under its own power at road speeds up to 10 mph with working speeds to 6½ mph. Loads heavy materials at from 1¾ to 2¼ cu. yds. per minute — snow at from six to eight cu. yds. per minute. Twenty-four inch spirals have replaceable toothed digging edges. Powered by a 4-cylinder, air-cooled gasoline engine.

Sub-Grade Planer



Manufacturer: Shovel Supply Co., Dallas 1, Texas.

Claims: Designed to answer the demand for a heavy duty, rigid machine which will not deflect under extreme loads, the Ferguson sub-grade planer is especially suitable for airport work. Its 10,000-lb. weight and sturdy construction make it possible to carry excess dirt forward to where needed. The blade will cut from 6 to 14 inches in depth and is instantly adjustable up and down by ratchet jacks acting independently on each wheel. The curved

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moldboard uses standard grader blades for flat grades, or special blades can be furnished to cut any contour of grade desired. Pull bars easily attached to tractor. Timken bearing transportation wheels can be quickly raised or lowered for moving. A removable tongue is provided for trailing.

1951 Truck Models

Manufacturer: Ford Motor Co., Dearborn, Mich.

Claims: Trucks feature automatic power pilot carburetion-ignition control on all engines. The system provides power with economy by metering and firing the correct amount of fuel at the right instant under varying loads without spark knock. The rear window was redesigned and enlarged to more than 3½ feet for full range vision. Instrument panel incorporates new full-vision instruments, rheostat type instrument light switch and a hand throttle on all conventional models. Weather sealing on doors is improved, and the floor pan area also is sealed against weather and fumes. Dual windshield wipers are standard equipment and positioned to give a full vision pattern on the one-piece windshield. A steering column gearshift on F-1 light duty models provides more cab and floor space. Performance of the F-1 trucks has been improved by changing the rear axle ratio from 3.73:1 to 3.92:1.

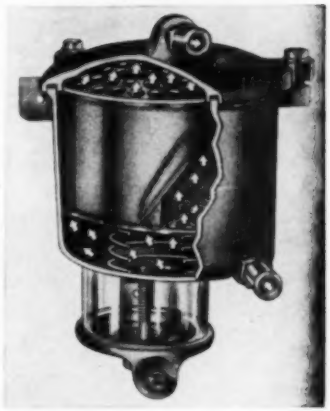
Mechanical Hoist

Manufacturer: Detroit Mechanical Hoist Corp., Detroit 16, Mich.

Claims: Mechanical hoist has no hydraulic fluid. It gives top performance in any weather, operating with equal efficiency at 70° below zero or 120° above. Because it comes factory-equipped with positive power-down as well as power-up, and a 55 to 60° dumping angle, the Dube mechanical hoist is extremely efficient in all spreading operations and in handling split loads of coal or other materials.

The power to lift the load is taken from the truck engine through conventional power take-off to a speed reducer and cone worm and gear set. The cam and roller principle combined with lifting arms generates ample power to dump the biggest load. Capacities range from models designed for light, medium and light-heavy trucks, to a model designed for heavy-duty dump trucks having a gross vehicle weight of 23,000 to 28,000 pounds. The 600:1 overall gear reduction ratio provides economical use of power.

Cooling System Filter



Manufacturer: Spark-O-Liner Corp., Minneapolis, Minn.

Claims: Perry cooling system filter can effect marked savings in maintenance costs due to engine breakdowns and reduction of lost working time due to such breakdowns. This is especially important in mine pumping operations, in oil field drill rig and pumping equipment, earth-moving equipment such as crawler tractors, and all activities

CORRECT REEVING IS ESSENTIAL for maximum bucket efficiency

PEAK bucket performance and service life depend on correct reeving. If your bucket is not digging a full load, increase the number of parts of line in the bucket. If overloading, reduce the number to obtain maximum closing and opening speed. Proper reeving also can prevent breakage of teeth, lips or bucket structure.

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THE MOST COMPLETE RANGE OF SIZES AND TYPES

where continuous, uninterrupted engine service spells the difference between success or failure.

The filter assures a constantly clean cooling system the year around and prevents scale insulation of block, water jackets and radiator — eliminating the main cause of burned valves, scored pistons and other expensive engine damage.

The electro-chemically activated filter placed in the coolant line will soften and clean the water or coolant and break up the accumulation of lime, rust, scale and sludge deposits in the radiator and cooling chambers of the motor block. Through use of a filter of this type, engineers have found that the foreign matter is kept in suspension in the coolant, and as it gradually goes through the process of filtering, this residue is deposited within the filter, thus resulting in a clear coolant circulation that cleans both the radiator chambers and motor block. Element is easily replaced.

Small Diesels

Manufacturer: Nordberg Manufacturing Co., Milwaukee, Wis.

Claims: Two-cylinder engine, rated at from 20 to 30 hp within an operating speed range of 1,200 to 1,800 rpm, has a 4½-in. bore and 5¼-in. stroke and is an extra heavy duty, vertical four-cycle, mechanical injection diesel engine. Designed to assure the utmost in reliability, the Nordberg 4FS2 engine features low operating cost and heavy duty construction. It is built as a complete, self-contained, ready to operate unit and is offered as an electrical generating set, pumping unit and with clutch or stub shaft power take-off for direct connection or belt drive. This engine is also available for marine auxiliary applications.

Hydraulic Hammer

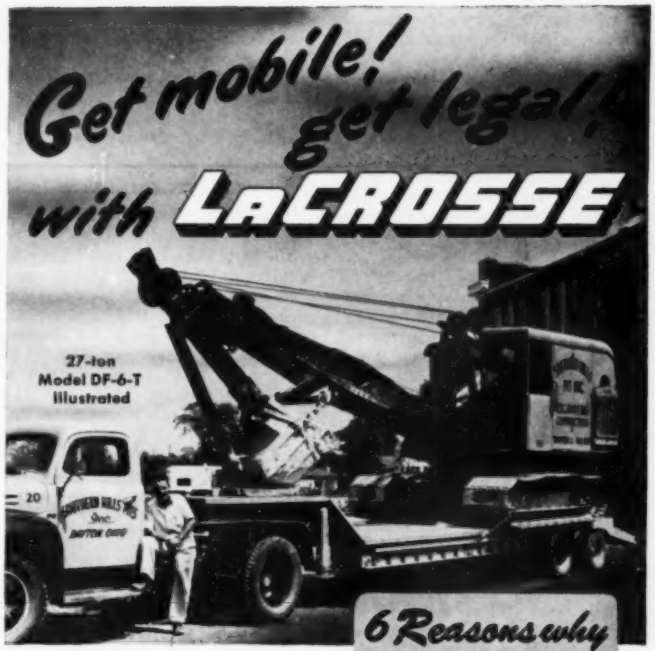
Manufacturer: Ottawa Steel Products, Inc., Ottawa, Kans.

Claims: Self-propelled hydra hammer gets to the job under its own power at road speeds up to 12 mph. The 400-lb. hammer is lifted by hydraulic energy, but is free falling, and shock to operator or machine is eliminated. This cuts operator fatigue and service and maintenance costs. Season or weather have no effect on the efficiency of this multi-purpose tool in its effectiveness of cutting and breaking asphalt and concrete.

30-Ft. Compressor

Manufacturer: Worthington Pump and Machinery Corp., Harrison, N. J.

Claims: Two-stage, air-cooled, 30-ft. capacity compressor has a maximum



Impending *shortages* of new equipment—plus strict *enforcement* of laws regulating hauling on public roads —make it highly desirable for you to check your 1951 trailer requirements IMMEDIATELY. Keep *present* equipment rolling, eliminate costly delays, with *job-proved* La CROSSE low beds . . . 8 to 67-ton capacity . . . single, dual or tandem axles . . . flat, drop or tilting platforms. Also custom-built trailers for special hauling problems.

6 Reasons why

1. Up to 2000 lbs. less dead-weight per trailer!
2. Stronger, *full-length* welded frame!
3. Bigger, more powerful S-cam brakes!
4. Tougher, longer-lasting brake linings!
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operating pressure of 150 pounds. It is equipped with: ASME air receiver, oil bath air cleaners, protective V-belt guard. Features include: circumferential cooling fins, tube and fin type air-cooled intercooler, positive by-pass unloader holds inlet valve open during idling period, feather valve, separate, close-grained cast iron honed cylinders, full floating wrist pins, oil dippers for controlled lubrication, aluminum low pressure piston and cast iron high pressure piston of equal weight for proper balance. This compressor is available in either a trailer model having an overall length of 74⅝ inches or a hand truck model with an overall length of 65 inches.

Hydraulic Truck Crane

Manufacturer: Pitman Manufacturing Co., Kansas City 2, Mo.

Claims: Mobile truck crane that can be easily installed on any type of truck and used with any make winch features simple design and hydraulic power. There are no gears or clutches to wear out. The boom swings in 180° arc and speed of swing can be regulated by truck driver from his cab. The boom of heavy, seamless steel tubing can be telescoped from 11 feet to 16 or 20 feet. Adjustable in height to allow for uneven terrain, outriggers give truck extra support when lifting over the side. Hydraulic system has an operating pressure of 1,250 psi, can be run off fan belt or power take-off. No special tools or skills are needed to install Hydra-Lift, for it can be installed on any type truck frame.

Grease and Gun

Manufacturer: Keystone Lubricating Co., Philadelphia 32, Pa.

Claims: Tenacious and highly adsorptive in character, Keystone grease No. 32 is supplied in cartridge form to fit a specially nozzled gun applicator which ribbons the grease and frequently allows application while gears are moving. This dispensing method affords easier, cleaner, faster application, and in many cases eliminates unit shut-down. No. 32 grease is water repellent, has high resistance to removal, has a melting point above 400° F. and retains plasticity with temperatures below freezing. There is also a density suitable for sub-zero applications.

Special Crane

Manufacturer: General Excavator Co., Marion, Ohio.

Claims: Model 310 crane was designed for use in underground mine. All motions are controlled by air, with the use of Air-Cushion clutches to operate the swing mechanism. This com-

bination gives the smooth accurate control necessary for the work the machine must perform in the mine. On the end of the lattice type boom there is mounted a "basket" or platform, designed to support one or two "scalers," whose job it is to remove loose rock and debris from the roofs and sides of the mine chambers after a blast has been made. This work is necessary to prevent injury to workmen and machinery, and the Model 310 permits the work to be done quickly and safely. Some of the cavern ceilings are 46 feet high. The platform is attached to the boom by a pantograph mounting, which

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keeps the platform level regardless of the angle of the boom.

The machine travels from one location to another with the 52-ft. boom in a horizontal position. The independent swing and travel provide the maneuverability required to negotiate the turns through the 30-ft. openings created by the stone pillars, which must be left in the mine for safety. A dolly is mounted under the point of the boom for easy maneuvering on the floor of the mine.

The boom is raised and lowered by two separate boomhoist units, the second one being provided as an additional safety measure. The speeds of the units are synchronized, and they are operated by two levers at the operator's position. Two posts, with dollies, extend upward from the basket, to prevent injury to the scalers and the boom point.

Wellpoint Pump

Manufacturer: Complete Machinery and Equipment Co., Inc., Long Island City, N. Y.

Claims: Small wellpoint pump has been successfully field tested for the past year and will give the capacity of many larger pumps, with portability which results from its smaller size and lighter weight. This makes for easier handling on firm ground or in sticky, clinging mud or sand, since it is mounted on two pneumatic tires allowing it to be towed at good speed from job to job. Pump fits all sizes and types of wellpoint systems and has a special outlet which may be used in jetting. It is powered by a Wisconsin air-cooled VP4 gasoline engine.

Lighting System

Manufacturer: Joy Manufacturing Co., Pittsburgh 22, Pa.

Claims: Driven by compressed air, the Joy-Lite will develop an output of 250 to 280 watts (power to operate four high-powered sealed-beam flood or spot lights) with air consumption not exceeding 25 CFM. Generator is mounted in a steel box which is equipped with a carrying handle for easy portability. Lamps have tripod swivel bases, which can be used as column clamps, and hooks which serve as hangers. The unit weighs 48 pounds.

Gasoline Heater

Manufacturer: Hunter Manufacturing Co., Cleveland 14, Ohio.

Claims: Hunter gasoline heater, model UH47, as factory-approved accessory equipment, is thermostatically controlled, operates independent of vehicle engine, produces 15,000 BTU/hr, and averages less than one pint of fuel consumption per hour.

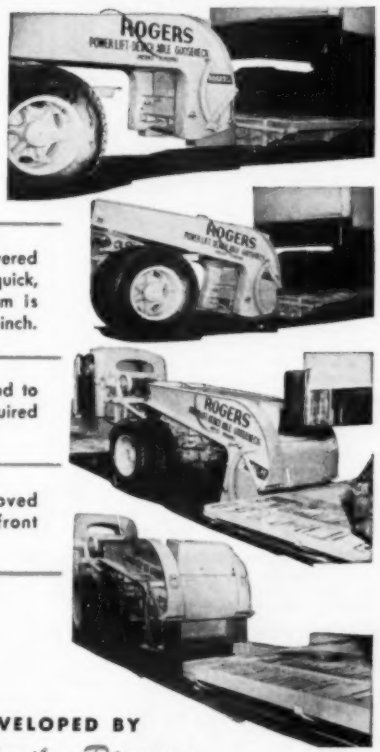
The ROGERS

POWER LIFT DETACHABLE GOOSENECK TRAILER

PATENTS PENDING

1 *Carries heavier loads on larger tires.*
2 *Detaches quickly for fast, easy front loading.*
3 *Stoops to clear low overhead obstructions.*
4 *Raises its deck to clear high banked crossings.*
5 *Is detached, loaded and re-attached in 5 minutes.*

IT'S EASY AS A B C



a Loaded trailer with deck in normal position for traveling.

b Front of trailer being lowered by cable operated ram for quick, easy front loading. Ram is powered by the customers winch.

c Front end of trailer lowered to ground. No blocking is required under frame.

d Tractor and gooseneck moved forward for quick, easy front loading.

DEVELOPED BY

The Trailer Pioneers

ROGERS BROS. CORP. ALBION PENNA.

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Coal Stripping

Continued from page 23

the 37-B dumps directly into the dragline bucket, making for fast, heaping loads.

Fast, heaping loads aren't the only advantages resulting from use of this dual combination. For one thing, dragline bucket maintenance is kept to a minimum. Prior to August, 1948, the dragline handled this operation alone, and since the dragline didn't have the advantage of the stockpiling done along the edge of the seam, it was necessary to make longer pulls through this rocky overburden. As a result, bucket maintenance was frequent and costly. Now with shorter pulls this expense has been sharply reduced.

The addition of the 37-B offers other advantages, too. The shovel's features make it a better tool for uncovering the last of the overburden from the seam for it can be more easily controlled reducing the possibility of disturbing the coal seam. Squaring out the seam is now done more efficiently, too. Also, a great deal of time formerly spent maneuvering the dragline into position is saved since the shovel spots overburden within easy reach of the dragline.

"All in all," Culligan said, "since we've added the shovel to this operation we've increased stripping efficiency 40%."

Dozer Flattens Spoil

In addition to the shovel and dragline, a D7 Caterpillar bulldozer, powered by a Caterpillar 105-hp diesel engine plays an important part in the stripping operation. Working ahead of the strippers, the bulldozer moves as much blasted overburden onto the spoil bank as it can. In doing this, the bulldozer levels off the spoil bank thus preparing a working bench for the dragline. The bulldozer is also instrumental in the maintenance and construction of haul roads, drainage ditches, and in locating a Paramanco V4 horizontal drill. This drill is mounted on a wooden platform to give it the proper height when drilling into the face of the highwall, and because of this mounting it's easy for the bulldozer to skid the drill from location to location.

Blasting at Deepwater is normally done twice a month, far enough in advance of the oncoming stripper combination so as not to hold up overburden removal. A typical blast will remove some 23,000 yards or some 500 lineal feet of overburden from the highwall. In preparing this overburden, two Paramanco drills equipped with 4-cylinder Wisconsin air-cooled gasoline engines are used — the V4 horizontal drill previously mentioned and a VF4 vertical drill.

Two-Way Blast

The following drilling pattern is employed: On the face of the highwall, the V4 horizontal drills a row of 5-in. holes four feet above the coal seam. These holes are spaced 15 feet apart and are drilled 40 feet into the face of the highwall. The VF4 vertical drills two rows of 5-in. holes on top of the highwall. The first row runs 20 feet from the edge of the highwall with the holes spaced 15 feet apart. The second row of 5-in. holes is drilled 40 feet from the edge of the highwall, or 20 feet from the previous row drilled, with the holes also spaced 15 feet apart but staggered in relation to the first row of holes drilled. These vertical holes are drilled down to the coal seam.

Into each hole 150 pounds of dynamite is inserted and all together 10,000 pounds of dynamite are required for an average blast. Little secondary blasting is necessary. DuPont dynamite containing 40% gel is the explosive — Primacord and DuPont caps the detonators.

Loading Not Complicated

Seam preparation for loading is less involved. No blasting is required and what little overburden may be lying on the seam is cleared away by men using coal shovels. Occasionally, it's necessary to clear away overburden which may have slid from the spoil bank onto the seam, but when this happens the 22-B does the cleaning while on its loading assignment.

When working the seam, the 22-B

4 days' work now done in 3

with JAEGER "new standard" compressors

Jaeger Model 125 runs 2 heavy duty or 3 medium breakers at full 90 lbs. pressure, doing 30% to 40% more work than at 70 lbs. pressure from a 105 ft. machine.

Other Jaeger "new standard" sizes, 75, 185, 250, 365, and 600 ft., give you comparable work increases. Cost no more than smaller old sizes. Send for Catalog and prices.

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Immediate Installation

by one unskilled man. 2½ to 12½ o.d. black or galvanized. Larger sizes can be furnished. Ready to lay—without delay.

DELIVERED READY FOR INSTALLATION

SEND COUPON NOW!

ALBERT PIPE SUPPLY CO., INC.
Berry & N. 13th St. Brooklyn 11, N. Y.

Please send free booklet describing your Speed-Lay Pipe System and services.

NAME
FIRM NAME
ADDRESS
CITY STATE

will load out an average 450 tons in a 7¼-hour day, working 20-ft. cuts at a time. Five gasoline powered trucks — four F-6 Fords and a 2-ton International — equipped with Marion, Gar Wood and St. Paul bodies, handle the hauling. Each truck will take some 20 loads a day, or about 90 tons to the tipple.

Tipple Sorts Three Sizes

At the tipple, which is on an average two miles from the seam being worked, the coal is washed and sized into domestic stoker, nut, egg, and lump. From here the Southern Railroad carries this coal to cities throughout the South.

In getting the coal out of the mine, Brookside-Pratt maintains three miles of haulage roads which are kept at a grade of 6% or less. Maintaining these roads is handled mostly in the fall of the year so that the roads will be in good condition for the winter hauling. The Bucyrus-Erie 22-B and Caterpillar D7 bulldozer handle this work with burnt rock wastes from the tipple used as surface material.

Ditches Keep Pit Dry

Another big use made of the 22-B and D7 is excavating drainage ditches. To date, a mile of drainage ditches, 12 feet wide, have been dug to keep the working areas free from surface water. Four Jaeger 4x3 pumps are employed to drain water from exceptionally low spots.

The 4-year safety record at Deepwater didn't just happen. It's a result of sound preventive measures which Culligan practices and maintains. First, Culligan knows the importance of having dependable men on the job—men who are as conscious of the safety of others as they are of their own. This he makes clear to the applicant seeking employment, and only when an applicant shows an honest willingness to practice all-out safety is he considered for the job. But Culligan doesn't stop here. He takes it upon himself to make a personal check on the man, finding out from the applicant's associates and previous employers if he can qualify to undertake the responsibility.

Watch Tool Condition

The second preventive measure is to keep tools in top working condition. The moment a tool shows the slightest defect, Culligan wants his men to report it, and the tool is immediately fixed. In this way, the high percentage

WITH A

SAUERMAN SCRAPER

DRAGLINE AND SCRAPER

This picture shows a Crescent scraper rigged with a crawler dragline to convert the dragline into a slackline machine that reaches several hundred feet and moves gravel from river onto bank.

SCRAPER STOCKPILING

A concrete construction project required storage of a large tonnage of aggregate on ground between railroad and mixing plant. Two Sauerman scraper machines, one of which appears in picture, stored and reclaimed 2,000 tons of material a day.

MOBILE SCRAPER UNIT

The Sauerman Tower Machine, illustrated above, uses a Crescent scraper attached to a trolley carrier which travels on a cable supported by two self-propelled towers. It can make a deep cut 1,000 ft. or more in width and move along as it digs.

In a Sauerman Power Drag Scraper you find a profitable combination of digging power, haulage speed, long reach, simple operation and economical maintenance. It cuts costs to the bone on almost any job of digging and hauling earth or bulk materials distances from 100 ft. to 1,000 ft. or more.

A Sauerman machine is particularly useful where ground conditions are difficult. It gives good results on such diverse work as the excavation of hard-packed gravel, movement of sticky clay, handling of waste material, bulk material stockpiling, removal of sludge from settling ponds and so forth. In digging from a high hill it overcomes the hazards of caving walls.

An important exclusive feature of the Sauerman scraper machine is the Crescent bottomless scraper. Because of its streamline design, the "Crescent" requires less line-pull than any other type of scraper, both in excavating and in conveying. It penetrates hard material with the ease of a plowshare, gathers a full load in a few seconds, then rides its load speedily to the dumping point where it makes an instantaneous, clean dump.

The operator of a Sauerman machine has finger-tip control of the entire operation. Automatic shifting of the tail end of the machine is provided where desired. Any workman is readily trained as an operator. Power requirement is moderate. Installation and upkeep costs are surprisingly low.

When you have a troublesome problem involving the movement of any kind of earth or bulk material, send a description of your project to the Sauerman Engineering Dept. Their advice, based on over 40 years of experience, is yours for the asking. Write for new 24-page Scraper Catalog.

Sauerman Bros., Inc.

574 S. CLINTON ST., CHICAGO 7, ILL.

There Is More to Wire Rope Than Meets The Eye—

it's the invisible "ingredients" that make the difference.

Other than its one Red-Strand, a "HERCULES" Wire Rope would look pretty much like any other rope having no distinguishing mark. But there is a difference! And that difference is due to a "thousand and one" *invisible* factors. It is made possible by setting up and rigidly maintaining exacting standards . . . by utilizing our almost 100 years of manufacturing experience in the designing and fabrication of wire rope . . . by strictly following the principle of "quality first!"

As it has never been possible to actually see the numerous properties that make one wire rope outlast another, we originated — in 1886 — the idea of painting one strand of "HERCULES" Wire Rope red, and since that time the Red-Strand has not only been a mark by which this rope could be identified, it has been our constant guarantee that its high quality is ever maintained.

Yes, there is more to "HERCULES" Wire Rope than meets the eye, but you can accept, with confidence, the assurance that the Red-Strand provides.

MADE ONLY BY

We Invite Your Inquiries

A. LESCHEN & SONS ROPE CO.

ESTABLISHED 1857 **5909 KENNERLY AVE. • ST. LOUIS, MO.**

New York 6 · Chicago 7 · Birmingham 6 · Houston 3 · Denver 2 · Los Angeles 21 · San Francisco 7 · Portland 9 · Seattle 4

of injuries resulting from faulty tools is kept to a minimum.

Facilities for keeping machinery and tools in good condition are a machine and welding shop. The machine shop is equipped with a Sidney lathe, Smith and Mills shaper, Superior drill press, a double emery wheel and a Wilson Hornert 300-amp. generator. Welding facilities include a 300-amp. Wilson gas welder and a Wilmington air compressor. Amsco, Reid-Avery and Ni-rod welding rods are used.

Showers Available

Additional mine facilities are a bathhouse with showers and lockers to accommodate the 18 men, a supply house for stocking repair parts, a magazine and cap house. The magazine house is of double wall construction and covered with tin sheet on the outside. The sides of the cap house are brick and the top is concrete.

Other equipment includes a 1½-ton Ford truck used for picking up and delivering bits and a late model Ford pick-up in which Culligan makes his rounds. Gulf oil and gas and Standard lubricants and grease service the trucks and machinery.

Officers of Brookside-Pratt Co. are: A. R. Long, president; J. H. Moore, vice-president; and Lannie Summerlin, acting general superintendent in the absence of L. A. Kelly. In addition to the Deepwater mine, these men manage the operations of four underground mines in Alabama.

HAYWARD BUCKETS

WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

THE HAYWARD CO.
52-54 Church Street
New York, N. Y.

Ft. Worth

Continued from page 19

of the river, a temporary ramp was constructed across the river channel early in the contract. This ramp was built from common fill by the Northwest 6 and the Bucyrus-Erie 38-B.

The first ramp built contained three 10-ft. diameter steel tubes to accommodate the stream flow. The tubes were constructed by punching out the ends of discarded 60-ft. refinery tank boilers and were moved into place by the draglines. Washed out five times by high water, the earth-fill bridge was rebuilt about 1,500 feet downstream where the river starts the loop which is being eliminated.

Dragline Has Many Jobs

The present crossing contains two of the 10x60-ft. tubes and needs constant repair to offset the erosion of the swift water. The work is usually handled by the Bucyrus-Erie 38-B dragline which is kept busy commuting to other parts of the job such as dressing the 2:1 slope of the river channel banks to berm grade, scooping up debris and willow roots and loading spoil to the Eucs.

To overcome the handicap of extremely wet weather and high water at the beginning of the job, this 65-man crew worked 'round the clock under floodlights, driving their equipment to the limit. Now, when it appears that they have the job licked, they are working a 10-hour shift, seven days a week.

Portable Greaser Speeds Work

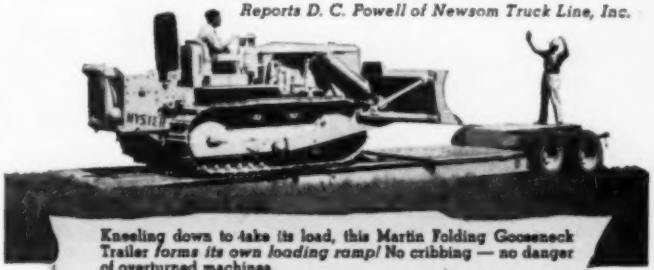
In order to keep this fast-moving assortment of equipment in top shape, Moorman uses a portable grease rig, contractor built, and manned by an expert greasing engineer and his helper. To save valuable time, the grease rig is moved to the equipment, wherever it may be. Mobiloil grease products are applied through Alemite fittings by a compressor mounted on the rig, which also carries fuel and tools for making repairs.

The personnel on this job includes: J. W. Moorman, Jim Moorman, George Blackard, superintendent, Joe H. Barden, inspecting engineer, U. S. Corps of Engineers. The project is under the direct supervision of Col. D. B. Freeman, district engineer, Ft. Worth District, Corps of Engineers.

"FASTER LOADING CUTS HAULING TIME 40%

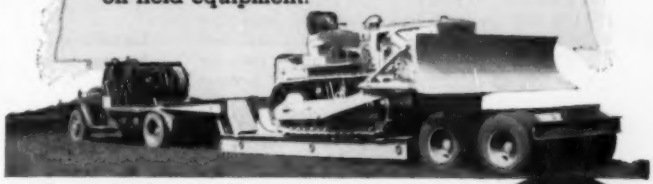
with our Martin Folding Gooseneck Trailer!"

Reports D. C. Powell of Newsom Truck Line, Inc.



Kneeling down to take its load, this Martin Folding Gooseneck Trailer *forms its own loading ramp!* No cribbing — no danger of overturned machines.

• "Since we purchased our Martin Folding Gooseneck Trailer, we have reduced our local hauling time 40% due to reduction in loading and unloading time. In addition, its light weight plus ruggedness allows us to meet load limits we had trouble meeting before. We recommend this trailer highly." Those are the words of D. C. Powell, Sec'y.-Treas. of this Houston hauler of oil field equipment.



Cranes, shovels, road rollers, paving equipment, any unwieldy or hard to load machines loaded in two to five minutes with the Martin.

Your Martin-"Caterpillar" Dealer can show you how Martin Folding Gooseneck Trailers can cut labor and loading time. See him today and start saving with Martin.

Your MARTIN DEALER is your "CATERPILLAR" Dealer

MARTIN Trailer

KEWANEE ILLINOIS

10 GIANT-SIZED speed OAHE DAM fill

3 30-yd. and 7 22-yd. units deliver 667 pay yds. hourly on 1½-mi. cycles

With approximately 3½ million yards of sand, gravel, clay and shale to move on Oahe Dam subcontract at Pierre, South Dakota, Campbell & Collins Joint Venture of Fargo, N.D., assigned 80% of total dirtmoving to 10 giant-sized, rubber-tired A Tournapulls. Seven of the 240 h.p., two-wheel "A" prime movers were coupled to 25-ton (22-yd.) E-25 Carryall Scrapers and three to 35-ton (30-yd.) E-35 Carryalls. Here's a report on how their performance is speeding this Missouri River flood control project:

When these pictures were taken, the fleet was hauling tough, sun-baked sandy clay from 2 pits, one with loading on the level and the other with loading down 35% grades. Time and distance for obtaining loads varied widely, even within the same pit, due to necessity of selecting soil to meet U. S. Engineer fill requirements. In the level pit, two 144 h.p. pushers teamed up to help Tournapulls get heaped loads in 70 to 115 seconds (average, 93 seconds) with a load distance 175 to 250 ft. In the downhill pit, using one 144 h.p. pusher, Tournapulls cut load time to 25 to 55 seconds (average, 38 seconds), and load distance to about 75 ft. From both pits, the E-25 Carryalls were getting average loads of 16 pay yards ... the larger E-35's, 21 pay yards.

Haul cycles from both pits averaged 1½ miles ... with 3700 ft. of favorable 9% grade to dump and 4225 ft. of adverse 0 to 14% grades on return. Giant 4-wheel air brakes—with 1812 sq. in. of braking surface on each wheel—permitted safe use of haul speeds up to 34 m.p.h. Dumping on the run helped each electric-control Tournapull complete a 7,925-ft. round trip every 13.1 minutes. On the basis of 50-minute efficiency, that's 3.8 trips per hour per unit, and an hourly output for each of the 7 E-25 scraper-equipped rigs of 61 cubic yards and for each of the 3 E-35's of 80 cubic yards.

Drive 190 miles to Pierre

Six of these Tournapulls are veterans of another big earthfill project—the Shadehill Dam, built across the Grand River near Lemmon, South Dakota. Their efficiency record on this job for the entire 1949 season was 85%. When their work here was finished, the 6 rigs drove under their own power to Pierre ... a 190-mile trip through main highway traffic.

Like Campbell-Collins, it will pay you to investigate the big pay loads and new low dirtmoving costs possible on your work with these mobile, 35-ton (30-yd.) and 25-ton (22-yd.) A Tournapulls. Your LeTourneau Distributor has all the facts ... call him, or write TODAY.

After Tournapulls spread their loads, 3 tractor-drawn Tournapackers roll-fill to specified density.

LETOURNEAU EQUIPMENT

Mail Today to: R. G. LeTOURNEAU, Inc., Peoria, Illinois

☐ Please furnish more information about your BIG Tournapulls.

Name _____ Title _____

Company _____

Street _____ City, State _____

Type of work to be handled _____

Also interested in:

☐ 35 m.p.h., 13.5-yd. C Tournapull

☐ 28 m.p.h., 7-yd. D Tournapull

☐ 19 m.p.h. C Tournadozer

"A" TOURNAPULLS
for Campbell-Collins

By September, 1950, 6 of Campbell-Collins' A Tournapulls had worked 4000 hours each at Shadehill and Oahe Dams . . . 4 newer "A's" had clocked 500 hours each here at Oahe. The Oahe job is being subcontracted from Guy H. James Construction Company of Oklahoma City, Oklahoma.

Tournadozer, Tournapull, Carryall, Tournapacker—Trademark Reg. U.S. Pat. Off. C141

LETOURNEAU PEORIA ILLINOIS — JOB-PROVED Over 7225 Built and Shipped — **TOURNAPULLS**

FOR LOWEST NET COST PER YARD

NOT in the *Contract*

Lady (holding a cookie above a dog): "Speak! Speak!"

Dog: "Why, I hardly know what to say!"

The stranger ambled into the farmyard and was greeted by the farmer. The visitor produced his card and remarked: "I am a government inspector and am entitled to inspect your farm."

Half an hour later, the farmer heard screams from his alfalfa patch, where the inspector was being chased by a bull. Leaning over the gate as the inspector drew near, the farmer cried: "Show him your card, mister — show him your card!"

The lecturer at a woman's club called an attendant and told her to be sure to place a pitcher of ice water and a glass on the speaker's table. "Do you want it for drinking?" she asked. "No," said the lecturer, "I do a high diving act."

Trusty: "I'll do anything I can Warden."

Warden: " Well, don't put yourself out."

"Did you get home all right after the party last night?"

"Fine, thanks, except that as I was turning into my street, some idiot stepped on my fingers."

Husband: "I've been thinking it over, dear, and I've decided to agree with you."

Wife: "It won't do you any good. I've changed my mind."

"Lady, if you'll give us a nickel my little brother will imitate a chicken."

"What will he do?" asked the lady, "cackle like a hen?"

"Naw," replied the boy in disgust. "He wouldn't do a cheap imitation like that — he'll eat a worm."

An Englishman was conversing with the clerk in the Ambassador Hotel.

"Here's a riddle," said the clerk. "My mother gave birth to a child. It was neither my brother nor my sister. Who was it?"

Englishman: "I can't guess."

Clerk: "It was I."

Englishman: "Ha, ha. Very clever. I must remember that."

The Englishman then told the story at his club.

Said he: "Here's the riddle, old top. My mother gave birth to a child, and it was neither my brother nor my sister. Who was it? What, you can't guess? Do you give up?"

"Yes."

"Ha, ha. It was the clerk at the Ambassador Hotel."

"There was a thief in my room last night and I thought it was my husband."

"Did he get anything?"

"No—I told you I thought it was my husband."

Jane: "Why is it that you have so many boy friends?"

Alice: "I give up."

The Sweet Young Thing delicately threaded her way through the huge locomotive plant. She viewed the operations, which were on a gargantuan scale. Awe was clearly written in her big blue eyes.

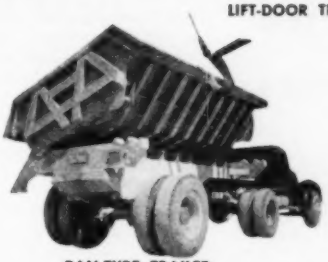
"What is that big thing over there?" she asked, tugging at the sleeve of her companion.

"Oh, that's a locomotive boiler," he replied.

She looked more puzzled than ever and puckered her pretty eyebrows. "But why do they boil locomotives?"

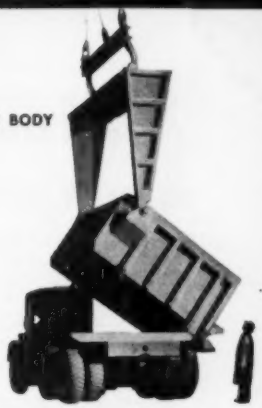
The young man lifted his eyes heavenward in a hopeless expression, and sighed: "They boil them to make the locomotive tender."

DROP-DOOR CAR



PAN-TYPE TRAILER

LIFT-DOOR TRUCK BODY



DROP-DOOR TRUCK BODY

PAN-TYPE CAR (PHOENIX)

DOUBLE-BOTTOM PAN-TYPE TRAILER

LIFT-DOOR TRAILER

PAN-TYPE TRUCK BODY

DOUBLE-BOTTOM DROP-DOOR TRAILER

What About Side-Dumps?

Experienced users say, "When side-dumps apply there is no reason to consider any other type of hauling equipment!"

Do the spectacular advantages of new, modern side-dumps apply to your hauling requirements? Is there an undiscovered opportunity to reduce your handling, increase your production, save hauling time and cut your hauling costs by switching to the *roll up, dump, and roll on* side-dump system?

Why not get the facts straight from headquarters — from EASTON side-dump engineers? With the right EASTON side-dump trailer or truck body teamed up with the truck chassis of your choice you've hit the winning combination. If it's cars, call EASTON, too! For complete information please direct your inquiry to the main sales office at:

EASTON CAR & CONSTRUCTION CO., EASTON, PA.

EASTON
Side-Dumps

CARS • TRUCK BODIES • TRAILERS

B-1043

Notes from the manufacturers

General Motors Corp., Detroit, Mich., has announced several changes in the sales department of Detroit Diesel Engine Division. E. F. Bentley, formerly contractors' equipment sales manager, has been promoted to sales operations section manager. R. V. Baxley has been appointed sales manager of contractors' equipment sales.

Four Wheel Drive Auto Co., Clintonville, Wis., has appointed H. G. Engel, manager of the western sales zone, as office sales manager and V. M. Anderson, district sales supervisor in northern Illinois, to the vacated zone managership. The latter's territory will include all states west of the Mississippi River and Illinois.

Gardner-Denver Co., Quincy, Ill., has increased service for its expanding Canadian business by establishing a Canadian plant. The new plant will be located at Brantford, Ontario, and will be operated by Gardner-Denver Co. (Canada) Ltd. Key production men will be temporarily transferred from the parent plant to provide the necessary initial supervision, but both skilled and unskilled labor will be obtained in Canada. Production of the new plant will be handled through the seven branch offices which the Gardner-Denver Co. maintains in Canada.

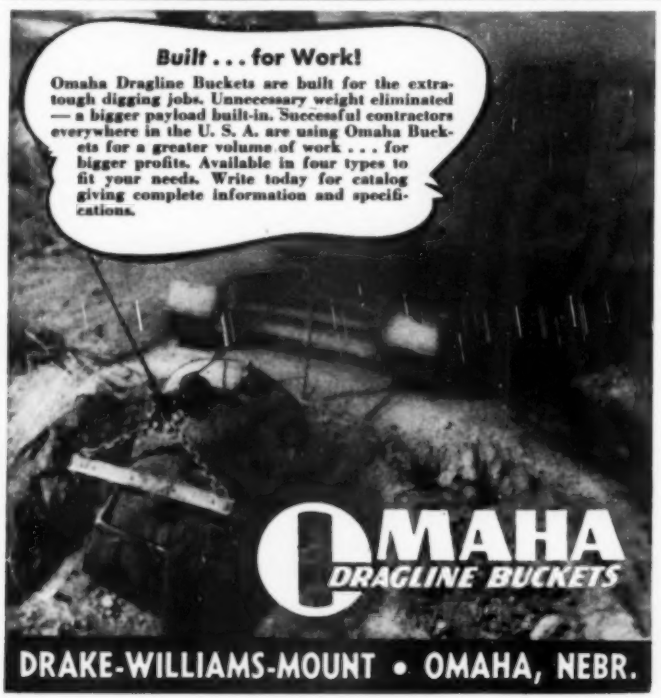
Bucyrus-Erie Co., South Milwaukee, Wis., has named Southwest Machinery Co., Oklahoma City, Okla., distributor for sales and service of ⅜- to 4-yd. shovels, dragshovels, draglines and cranes, as well as sales and service of the all-hydraulic 2-ton and 3-ton Hydrocranes throughout the entire state of Oklahoma. The new distributor has branch offices in Tulsa, Hobart, and Guymon.

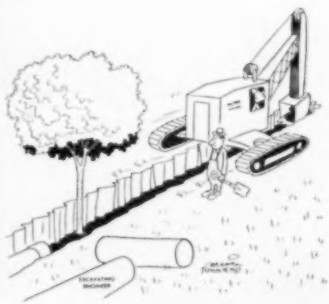
Hobart Brothers Co., Troy, Ohio has started operations of new facilities to test its products under subzero conditions. In a special cold room products are tested at temperatures ranging down to 65° below zero. Testing equipment consists of a graphic thermometer for continually charting ambient air or room temperature with a range of minus 100° to plus 100° F; an indicating potentiometer which has 24 stations, is self-balancing, calibrated directly in degrees Fahrenheit with a range of minus 100° to plus 1200° F. with appropriate thermocouples.

United States Rubber Co., NYC has named Joseph A. Conlon, formerly district sales manager, Chicago branch, as manager of allied sales for the mechanical goods division. Edwin D. Meade, formerly manager of western railway sales, was appointed district sales manager, Chicago branch, replacing Mr. Conlon. Mr. Conlon joined U. S. Rubber in 1930 as a salesman in Los Angeles, and in 1945 he was named assistant district sales manager of the mechanical goods division's Chicago branch. In September, 1949, he became district sales manager in Chicago. Mr. Meade entered mechanical goods sales in New York in 1936. In 1941 he became a special representative of the war products division with headquarters in Washington, D. C. In 1947 he was transferred to Chicago as manager of western railway sales.

Gar Wood Industries, Inc., Wayne, Mich., has appointed Dwight L. Mink as district manager in the midwest region. He will be responsible for the sale and service of Wayne equipment in Wisconsin, Illinois, Kentucky, the Upper Peninsula of Michigan; southwestern Ohio; eastern half of Missouri; southeastern Iowa and Indiana with exception of the northeast corner of the state. Since 1945 he has been manager of the Chicago branch of Gar Wood Industries, Inc.

Shunk Manufacturing Co., Bucyrus, Ohio, has named J. Austin Carrington director of sales. Mr. Carrington was formerly marketing and distribution executive with the General Electric Co. He is a graduate of Depauw University.


Built . . . for Work!
Omaha Dragline Buckets are built for the extra-tough digging jobs. Unnecessary weight eliminated — a bigger payload built-in. Successful contractors everywhere in the U. S. A. are using Omaha Buckets for a greater volume of work . . . for bigger profits. Available in four types to fit your needs. Write today for catalog giving complete information and specifications.
OMAHA
DRAGLINE BUCKETS
DRAKE-WILLIAMS-MOUNT • OMAHA, NEBR.

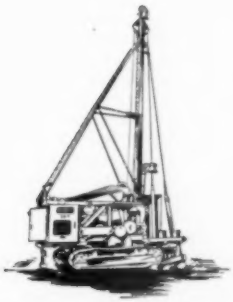


RAMROD PUNCH WITH A SHATTERING SNAP

That's

BUCYRUS ERIE

DRILLING ACTION



NOTED for fast penetration, hard-hitting Bucyrus-Erie Blast Hole Drills ram down 5⅝-in. to 12-in. diameter holes in short order — save hours of blast preparation time. High speed penetration is the result of two main factors:

1. BALANCED DRILLING MOTION

Bucyrus-Erie Blast Hole Drills are scientifically designed to provide the most effective combination of tool weight, blows per minute and length of stroke. The result is a balanced motion that produces outstanding hole footage even in the toughest drilling.

2. SHATTERING SNAP-BACK

Key to the super-shattering action of every blow is the snap-back of the bit provided by a rubber shock absorber — a Bucyrus-Erie first, and the most successful drilling rig shock-absorber yet devised. As the tools travel down, the discs compress. The instant the bit strikes, the discs expand and snap the tools away from the hole bottom, thus giving a sharp, smashing blow instead of a "dead" hit.

But fast hole penetration is only part of Bucyrus-Erie's low-cost drilling story. Let us send you all the details.

22-T	5⅝"	to	6¾"	holes
27-T	6"	to	6¾"	holes
29-T	6¾"	to	9"	holes
42-T	9"	to	12"	holes

BUCYRUS ERIE

408510

SOUTH MILWAUKEE, WISCONSIN

New trade literature

Title: **4-wheel Scraper**
Subject: Mailer describes and illustrates Caterpillar No. 80 scraper. Separate features are discussed and complete specifications are given.
Where to get: Caterpillar Tractor Co., Peoria, Ill. (Free)

Title: **Crane and Dragline**
Subject: Catalog describes machine rated as a 3-yd. dragline, with lift capacities of 60 tons at 12-ft. radius and 30 tons at 30-ft. radius. Bulletin lists complete working ranges and capacity tables, and explains how the added capacity claimed at long radii is obtained. Pictures and text illustrate features and machinery details, with gear diagrams and photos of optional equipment available for special jobs. A half page of diagrams and photos show how the crane can be loaded and unloaded for rail shipment by handling its own components.
Where to get: Manitowoc Engineering Works, Manitowoc, Wis. (Free)

Title: **Pump Catalog**
Subject: Complete description of pumping systems is divided into five handy indexed sections including dewatering, pressure pumps, electric pumps, wellpoint systems and useful data for pump users. Book is completely illustrated and contains specifications for Jaeger pumps in sizes ranging from 55 to 240,000 gph. Complete catalog or any particular section is available.
Where to get: Jaeger Machine Co., Columbus 16, Ohio. (Free)

Title: **Wire Rope for Excavators**
Subject: Booklet describes wire rope for all types and phases of excavating equipment. Ropes are recommended for shovels, draglines, trench hoes, scrapers and skimmers. Detailed drawings show how to rig each machine and the particular type of rope to use for each application.
Where to get: John A. Roebling's Sons Co., Trenton, N. J. (Free)

Title: **Clamshell Buckets**
Subject: Brochure describes complete line of Haiss clamshell buckets for various types of excavating and ore handling. Construction features are detailed and illustrated and complete specifications are given.
Where to get: Pettibone Mulliken Corp., 4700 W. Division St., Chicago 51, Ill. (Free)

Title: **4-yd. Shovel**
Subject: Booklet gives a complete design and performance story on machine equipped with diesel power and electric swing which is available for service as a shovel, dragline, clamshell, crane or long range shovel. The 111-M carries a 4-yd. dipper as a standard shovel and a 3½-yd. dipper as a long range shovel. Dragline bucket capacity varies from three to five yards, depending on the length of the boom.
Where to get: Marion Power Shovel Co., Marion, Ohio. (Free)

Title: **Industrial Hose**
Subject: Bulletin contains valuable information in the way of industrial hose and fittings specifications as well as instructions on assembling fittings to hose lines. Also included is detailed information on Aeroquip self-sealing couplings and Aeroquip breakaway couplings.
Where to get: Aeroquip Corp., Jackson, Mich. (Free)

Title: **Hard Surfacing Bulletin**
Subject: Outlines applications, precautions and suggestions on the proper procedures. Basically it states that success in the facing of manganese is in avoiding reaching high temperatures throughout the body of the steel, a precaution which should be observed on pieces even as small as a shovel tooth. It is stated that where precautions as outlined in this article have been observed, manganese has been successfully hard surfaced.
Where to get: Rankin Manufacturing Co., 3072 West Pico Blvd., Los Angeles 6, Calif. (Free)

Title: **Aggregate Facts**
Subject: Vest Pocket-size booklet of handy information on crushing, screening, washing, materials handling and aggregates. Booklet contains tables on stage of reduction and capacities of crushers, capacities of screens, how to select conveyors and feeders. Horsepowers required to operate various types of equipment are given, and there are tables showing how to select drives. Charts showing the percentages of each size of stone in the product of a crusher, whether it be in open or closed circuit are presented. Tables on electric power have been added, as have useful tables for the bituminous contractor. In addition, there are included numerous tables of miscellaneous information on weights, measures, conversion factors, trigonometric functions, square and cube roots, etc.
Where to get: Pioneer Engineering Works, Minneapolis 13, Minn. (Free)

Title: **Winch Line**
Subject: Folder recommends wire rope for every application and gives specific reasons why this particular rope is especially suited for the job. It

DREDGES
HYDRAULIC
DIPPER
CLAMSHELL
Bolted sectional steel hulls for landlocked, inland waters
If you need a dredge, write us!
AMERICAN STEEL DREDGE CO. INC.
FORT WAYNE 1 · INDIANA · U.S.A.
DESIGNERS AND BUILDERS OF DREDGING EQUIPMENT SINCE 1905

Need
STEEL SHEET PILING?
RENT IT . . . FASTER FROM FOSTER
LARGEST STOCKS IN U. S.
ALL LENGTHS & ALL SECTIONS TO MEET ALL YOUR NEEDS
Also: CORRUGATED STEEL SHEET PILING
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Foster's new lower rental rates on all standard piling sections give you a low fixed expense as an added advantage when you bid on jobs; and you also get the FOSTER GUARANTEE.
Send for Piling Reference Chart EE-5
RAILS • TRACK ACCESSORIES • PIPE • WIRE ROPE
L.B. FOSTER CO.
PITTSBURGH 30, PA.
CHICAGO 4, ILL.
HOUSTON 2, TEX.
NEW YORK 7, N.Y.

points out the definite advantages of practices resulting in more work handled, longer rope life and extra safety.

Where to get: American Chain and Cable Co., American Cable Division, Wilkes-Barre, Pa. (Free)

Title: **Engineers Handbook Library**

Subject: Revised engineering library is a 6-volume reference on every phase of structural engineering. Each volume contains hundreds of figures, diagrams, charts, tables and photographs.

Where to get: McGraw-Hill Book Co., 330 West 42nd St., New York 18, N. Y. ($29.75 the set)

Title: **Enclosed Motors**

Subject: Totally enclosed, non-ventilated, squirrel cage, induction motors include continuous duty ratings built in NEMA standard frame 284. Brochure covers 7½-hp, 1,800-rpm and 5-hp, 1,200-rpm motors.

Where to get: Fairbanks, Morse & Co., 600 South Michigan Ave., Chicago 5, Ill. (Free)

Title: **Drill Bulletin**

Subject: Bulletin presents in condensed form the complete line of Acker drilling equipment developed during the past 30 years. Specifically covered are diamond and shot, core drills and soil sampling tools.

Where to get: Acker Drill Co., Inc., Scranton 3, Pa. (Free)

Title: **Engine Booklets**

Subject: Three folders on the International Harvester line of engines and power units are available. One booklet deals in engine applications, another in diesel engines and power units and a third covers carbureted engines.

Where to get: International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill. (Free)

"How would I know where he went?"

35 m.p.h. BANTAM*

averages 5 tank installations per day!

completes 40 basements in 7 weeks!

During spare time between tank jobs, Eisenhart fits his Bantam with larger 30" bucket and keeps busy digging house basements under sub-contract. In 7 weeks Bantam finished 40 basements, averaging two 30' x 36' x 5' excavations per day — including driving time to and from jobs.

YOU can get a BANTAM for only $6040

(Hoe, less Truck) F.O.B., Waverly, Iowa. Prices subject to change without notice.

M. S. Eisenhart, York, Pa., reports amazing economies in installing concrete septic tanks with truck-mounted Schield Bantam Trench Hoe. Equipped with 20" bucket and fast-change back-fill attachment, Eisenhart's mobile Bantam easily *excavates and covers 5 average-size tank installations in one day — more than double the output of any previous method!* The versatile Bantam also does trenching for house-to-tank connections . . . excavates seepage beds . . . uses 25' boom with clamshell bucket for digging deep cess pools, etc. You, too, can speed work, cut costs, with a fast-moving Bantam. Write today for FREE Bantam literature.

*Reg. U.S. Pat. Off.

TEAR OFF and MAIL THIS HANDY COUPON NOW!

Schield Bantam Co.
2 [illegible] Park St., Waverly, Iowa

☐ Send FREE literature on truck-mounted Bantams.

☐ Include name of nearest distributor who sells, services and demonstrates Bantams.

I am interested in:
☐ Trench Hoe
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☐ Clamshell
☐ Pile Driver

Name _____ Title _____

Occupation or Business _____

Address _____

City _____ State _____

SB-C5

SCHIELD BANTAM

Costs less . . . travels 35 m. p. h.

GETS MORE JOBS DONE

News

Continued from page 35

for the Material Handling Conference which will be held concurrently with the National Materials Handling Exposition at the International Amphitheatre, Chicago, April 30 to May 4, inclusive. The society's membership is composed principally of users of materials handling equipment.

The society is sponsoring the conference and the Material Handling Institute is sponsoring the exposition. Clapp & Poliak, Inc., New York City, will conduct the exposition.

General chairman of the conference will be A. K. Strong, marine division, Columbian Rope Co., New York City. Serving with him on the executive committee will be Donald W. Pennock, factory engineer, Carrier Corp., Syracuse, N. Y., who is society president, and Irving M. Footlik, materials handling consultant, Chicago, society treasurer.

Dredge Leaves Galveston

The U. S. Hopper Dredge Biddle, one of the Corps of Engineers' newest and most modern dredges, has been transferred to the Portland District in Oregon.

The hopper dredge presently operating in the Portland District will be retired and the *Biddle*, a turbo-electric, sea-going dredge, will replace it. The *Biddle* returned to Galveston last November, after undergoing annual repairs at Mobile, Ala. repair docks.

The Galveston District does not presently require the services of a hopper dredge since the five jettied entrances of the Texas Gulf Coast have been dredged to authorized depths. Barring storms, it is anticipated that a hopper dredge will not be required by the Galveston District before six months. If one is needed, the Gulf Coast or the Atlantic Seaboard will have one available.

The majority of key personnel presently operating the *Biddle* have expressed their desire to accompany the dredge to her new destination.

Horner V.P. Nominee

Arthur S. Horner, president of the A. S. Horner Construction Co., Denver, Colo., has been nominated for Vice President of The Associated General Contractors of America in 1951, President Walter L. Couse of Detroit, Mich., announced today.

Mr. Horner was nominated by the association's Executive Committee, which acted for the Governing Board in approving the recommendation of the Nominating Committee.

Association procedure is that the Governing Board nominates officers for the coming year at its Mid-Year Meeting. The late Gayle G. Armstrong of Roswell, N. M., was nominated in September but died in October.

Glenway W. Maxon, president of the Maxon Construction Co., Dayton, Ohio, the current Vice President, was nominated for President in 1951 by the Boards. Balloting took place during December, and the new officers will be installed at the conclusion of the association's 32nd annual convention in Boston, March 1, 1951.

Excavating Engineer (1949) Available on Microfilm

Volume XLIII of EXCAVATING ENGINEER (the twelve 1949 issues) is now available on microfilm from the University of Michigan. Libraries with acute storage problems may find it convenient to keep 12 issues on a single metal spool.

Discounts are available on the film and on reading machines for those purchasing microfilms in quantity. Inquiries should be directed to: University Microfilms, 313 N. First St., Ann Arbor, Mich.

$10,000 SAVED ANNUALLY
on a $12,600 investment
$3,500 SAVED ANNUALLY
on a $4,500 investment
These are actual Case Histories

CASE HISTORY No. 1
With a New Bulldog Hammermill crushing 20" and under Fuller's Earth, 30% moisture

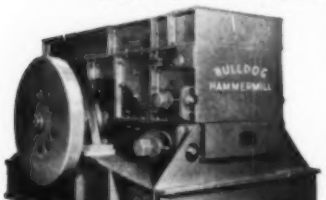
Before	After
Operation required one primary double roll, 8 screens, two secondary double rolls, with auxiliary equipment. Continuous clogging, produced irregular finished product, consumed excessive fuel in drying; extruding operations expensive.	Installing one Bulldog Hammermill. One stage operation, no clogging – no delays or shutdowns. Now produces a uniform cubicle product easily dried, saving fuel. Saves labor, maintenance, fuel and produces a better finished product.

Second Hammermill purchased as result.

CASE HISTORY No. 2
Rebuilding an existing, operating Hammermill crushing limestone for cement

Before	After
Maintenance required replacement of 26,400 lbs. of manganese steel hammers and 12 sets of hammer bolts annually. Load capacity required extra operating hours. Primary grinding was not suitable for final roll type pulverizer.	With Bulldog rebuilding, the Hammer replacement was reduced to 3,600 lbs. manganese steel and one set of hammer bolts per year. Capacity increased 30% with less power consumption, better finished product saving power and maintenance in roll type pulverizer.

CAN YOU CUT COSTS
INCREASE CAPACITY — IMPROVE PRODUCT
with a NEW BULLDOG HAMMERMILL



Bulldog Hammermills with Non Clog Moving Breaker Plate for sticky or high moisture materials or with *Stationary Breaker Plate* for dry materials are built in all sizes up to 72" x 60" for primary, secondary, and fine reduction. Write for complete details.

A PRODUCT OF PETTIBONE MULLIKEN CORP.

Hammermills, Inc. is now a division of Pettibone Mulliken Corp., and has the tremendous facilities of PMCO. to back our products . . . with full control over research, construction and fabrication – combined under one roof.

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4790 W. Division St., Chicago 51, Ill.
'Phone Spaulding 2-9300

division of

PETTIBONE MULLIKEN CORP.
4700 W. Division St., Chicago 51, Ill.
'Phone Spaulding 2-9300

Big and Strong... Better than Ever...

MARION 111-M

Machine illustrated has Diesel power with electric swing. Also available as full Ward-Leonard Electric machine.

MARION gave the industry a new conception of excavating equipment in 1946 when the MARION 111-M was introduced. Here was a 3½-4 cu. yd. machine with all of the benefits of Diesel power PLUS all of the advantages of electric swing. Big enough for high daily yardage, yet easily moved from one job to another. Power enough to stand up to big jobs without flinching. Heavy enough to be steady on its long, wide crawlers.

Now—the MARION 111-M is bigger and stronger—better than ever. It is a thoroughly field-proven machine, piling up performance records that are truly impressive. (Write for copies of letters from 111-M owners.)

Regardless of whether you have seen the MARION 111-M before, you should see it today if a 3½-4 cu. yd. machine has a logical place in your operations. It's a rugged, heavy machine as a shovel or dragline with power and strength to spare.

The 111-M is an important new tool for heavy-duty material handling. Get the full story from your MARION representative or write to the factory for information.

MARION POWER SHOVEL COMPANY

MARION, OHIO, U. S. A.

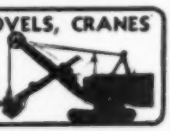
Offices and Warehouses in all Principal Cities • Established 1884

TO ADVERTISE: All advertising in this section is payable in advance. Rate: 60c per line, or $7.20 per inch of 12 lines. Minimum charge $2.40. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters. (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date — 15th of preceding month. Example: January closes December 15th.

FOR SALE

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

LARGE SHOVELS, CRANES AND DRAGLINES



1¼ YDS. AND UP

No. 15-62 model 7290, Marion walking dragline, 135' boom, 24' diameter base, powered by Fairbanks-Morse, model 38, six-cylinder diesel engine driving the hoist and drag machinery. Cummins HIB 600, six-cylinder diesel engine driving the generator for furnishing current to the independent swing machinery. Location Wyoming. Box 3430

SMALL SHOVELS, CRANES AND DRAGLINES

UP TO 1¼ YDS.

New Bucyrus-Erie 37-B shovel front end complete.

N. Fornaby
Route No. 4 Ft. Lee, New Jersey

Northwest model 25; 6; 80D; 95. Manitowoc 3536; 4500 new — will rent. Bucyrus 54-B; Monighan 8W; 7W; 9W; 450.

A. W. Nevers Phone 82 Mt. Pleasant, Iowa

MISCELLANEOUS EQUIPT.

For Sale or Rent

This equipment is in excellent condition, should be seen to be appreciated.

1—Wooldridge BBM 6-8 cu. yd. scraper, 14:00x20 tires.
1—Wooldridge WEU2 DDPCU — for HD-7, HD-10, D6 or D7.
1—10-ton Gar Wood winch with tractor mounting.
1—Automatic Kohler light plant, 4 cyl. gas. motor.
1—18-B Bucyrus-Erie backhoe with 50 ft. crane boom.
1—19-B Bucyrus-Erie backhoe.
1—HD-7 Allis-Chalmers bulldoser, Gar Wood blade.

Wendell E. Knowlton
Bellefontaine, Ohio

New—10-yd. dragline bucket, placer type with 4-inch square perforations in bottom and back. Located in our yard. BARGAIN.

California Pipe & Machinery Co.
1250 East Shore Highway Berkeley, California

1—2½-yd. shovel attachment less deck machinery for Bucyrus-Erie 54B. $4,000.
1—Northwest 40 ft. crane boom for Model 105. $400.
3—Koehring 35 ft. crane booms for Model 304. $250 each.

The Lorenz Equipment Company
547 West Rich Street Columbus 8, Ohio

D4, 1946, with rolls and sprockets, overhauled, hydraulic blade—$3600.
TD14, 1946, hydraulic angledoser blade, in good condition—$6900.
25-ton pneumatic-tired trailer, Brockway horse $2500.
Two Slusser-McLean scrapers, 10 to 12½-yards—$2500 each.
LaPlante-Choate heavy-duty rooter, three teeth —$850.
TD9, 1946, cabledoser blade—$2900.
¾-yd. Backhoe attachment for Link-Belt 50. Like new—$2000.
D8, pins, bushings, sprockets and idlers all new, hydraulic, two-drum power control unit, 1946 $9300.
Koehring, 1947, model 304, ¾ yard shovel, backhoe and crane—$15,500.
Searchlight trailer, pneumatic tires, tilt trailer, good for D2 Caterpillar or TD6, four tires—$450.
Peerless 4" deep well pump with 4-cylinder Wisconsin motor, in crate, new—$195.
Winch with 6-cylinder Hercules motor, new, in crate, motor will fit ¾ yard shovel—$600.
1 rear mounted crane, Hughes-Keenan, for a D7 with a hoister winch—$850.
Crane boom, 60 foot, for Model 6 or 80D Northwest—$1400.
Manganese dipper fronts or lips for 1½ yard Lorain or 1¼ yard Northwest, also backs for 2 yard Northwest, 1¼ yard Link Belt—these are new—price 50% of new.
Set of new chains and pads for D4.
2 drum power control unit for TD14 and 18.
2 drum, two niggerhead cargo winches from ships, one new, one used, electric motors—$450 each.
One new two drum power control unit for a D7 —$65.
The above is our own, immediately available, subject to prior sale. Let us hear from you for any other equipment you are in need of or want to get rid of.

R. E. Cunniff
393 Brookline Street, Newton Center 59, Mass.
Lasell T-4380

Bucyrus 42B, 44B, 200B, 170B shovels.
Walking draglines, diesel, elec., 6 & 3-yd.
Marion 8-yd. elec. shovel; 7200 diesel drgl.
Euclids, Athens, Macks, 9, 10, 12, 21-yd.
Telsmith crushing, screening, wash plant.
Butler batch bin, 120-240 tons; cement silo.
Crushers, gyratory and jaw, large (7).
Locomotives, 7 to 50 tons, diesel, gas, stm.
Diesel electric generators, 150 to 1250 HP.
Gantry bridge & coal cranes; loco. cranes (4).
B-Erie shovel front att., 2¼ yd., L2B-55B.

H. Y. SMITH CO., 828 N. B'way, Milw. 2, Wis.

1—36"x48" Link Belt type C adjustable roll, spring relief primary coal crusher with "V" belt drive. American Manganese steel segments. Service—7 months. Excellent condition.

Pioneer Mining Corporation
Appleton City, Mo.

New Dragline Buckets

1—1¼ cubic yard Red Arch Type AX medium duty buckets.

2½ cubic yard Type AX dragline bucket. (Reconditioned.)

3 cubic yard Red Arch, Type AY heavy duty bucket.

Bucyrus-Erie Company
Parts Division
South Milwaukee, Wisconsin

90'-0" boom dragline equipment for 100-B shovel, western location. Box 3425

1—Bucyrus-Erie 10-B shovel front attachment —used.
1—Bucyrus-Erie 22-B heavy-duty rock dipper shovel front—new.

The Bode-Finn Company
2650 Spring Grove Ave.
Cincinnati, Ohio
MUlberry 2200

USED DRAGLINE BUCKETS

2—4-cubic yard Red Arch dragline buckets heavily reinforced for rock work. Priced 55% and 45% new cost for immediate sale. Also quantity new and used hardware for each.

Edna Coal Company
Steamboat Springs, Colorado

New, Surplus Engines At Bargain Prices

2—Hercules Model JXB gasoline engines, 6 cyl. 3⅝" x 4¼", rated 65 H.P. at 1600 R.P.M.

Bucyrus-Erie Company
Parts Division
South Milwaukee, Wisconsin

Boom, dipper stick and dipper for Bucyrus-Erie model 37-B shovel in first-class condition. Price $1500.

Union Concrete Pipe Company
Ceredo, West Virginia
Phone Kenova 4131

WANTED

Wanted: One 2 to 3 yd. electric crawler crane or clamshell. Advise age, mfr., approx. location and price. Box 3427

HELP WANTED

EXPORT SERVICE ENGINEER required by manufacturer of tractor equipment. Should be well advised on crawler tractors and allied equipment. Must be willing to travel abroad. Box 3429

POSITIONS WANTED

Gen. supt. or supt. available. Experience covers 25 year supervising, estimating and building all classes of excavating; railroads; highways; airports; earth-fill dams; large sewers. Honest, sober, reliable. Best of references. Box 3430

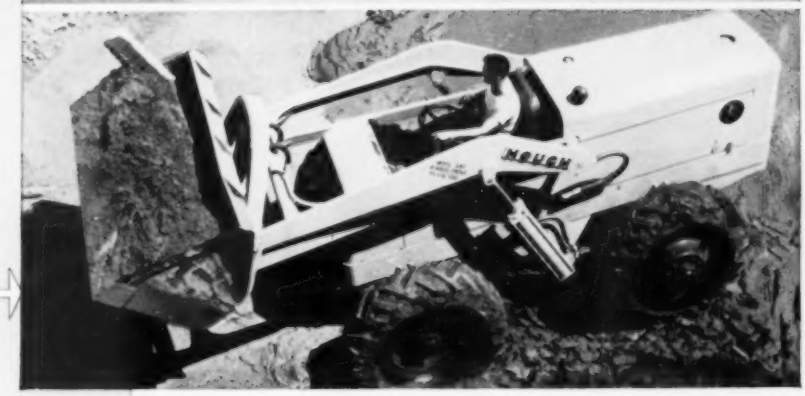
Power shovel and excavating equipment operator. A-1 mechanic. Will go anywhere. Now located in Maryland. Box 3431

ON PAVEMENT

Model HF
¾ yd. PAYLOADER

IN PITS

Model HM
4-wheel-drive
1½ yd. PAYLOADER



PAYLOADERS

PAY OFF ANY PLACE

CATALOG and complete facts about any size PAYLOADER are available without obligation: the big 4-wheel drive 1½ yd. Model HM; the 1¼ yd. HY; the ¾ yd. HF; the ½ yd. HE; the 12 cu. ft HA.

PAYLOADERS work where you want them to work — on pavement, in sand, gravel or stone pits, in yards, or on any earth-moving job off the road, because they have tremendous traction and flotation on big pneumatic tires, plus proper weight distribution.

ALL PAYLOADERS have full-reversing transmissions with several speeds both forward *and* reverse. ALL PAYLOADERS have operator location high and forward for full visibility . . . have complete fingertip hydraulic control of lifting, lowering, bucket-dump and bucket-close.

In PAYLOADERS you are assured of the best in tractor-shovels — complete unit-design tractors *and* shovels built by the world's largest tractor-shovel manufacturer, with a world-wide service organization to keep your jobs going. THE FRANK G. HOUGH CO., 708 Sunnyside Avenue, Libertyville, Illinois.

Now CARSET JACKBITS give even better performance

. . . with this new attachment developed exclusively for use with tungsten carbide bits

(Series 100 Carset Jackbits)

The experience gained in the field with hundreds of thousands of Carset Jackbits, has enabled Ingersoll-Rand engineers to develop an attachment that matches the revolutionary performance and long life of Carset Jackbits. It is the only attachment now available designed primarily for use with tungsten carbide bits.

This new attachment incorporates a patented 38-degree reverse buttress thread. After exhaustive tests, it was selected as the best design to cushion and absorb the destructive reciprocating and rotational forces that tend to wear bit threads or break the threaded extensions on drill rods.

In addition, the attachment permits appreciably more metal in the skirt walls of Carset Jackbits which greatly increases their body strength. This added metal makes the strongest possible bits. This is particularly important in small bit sizes.

In short, even greater economies are now possible from Carset Jackbits. This new attachment is designed to give trouble-free service for the life of the bit.

The Ingersoll-Rand Series 100 attachment is offered in four sizes and covers bit gauges from 1⅜ inches to 3 inches. It is easy to make this attachment... upset the drill rods on a sharpener and form the threads on an engine lathe or a Toledo threading machine. Write today for full information to Ingersoll-Rand Company, New York, or any of our 27 domestic branches.

CARSET JACKBIT

SET WITH CARBOLOY INSERTS

Ingersoll-Rand

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ROCK DRILLS • COMPRESSORS • AIR TOOLS • TURBO BLOWERS • CONDENSERS • CENTRIFUGAL PUMPS • OIL & GAS ENGINES